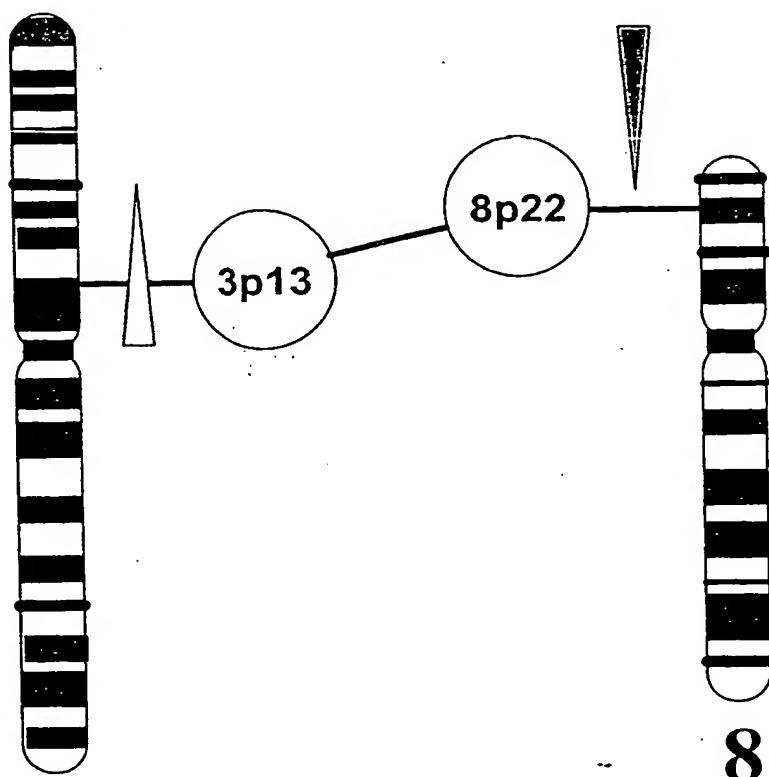


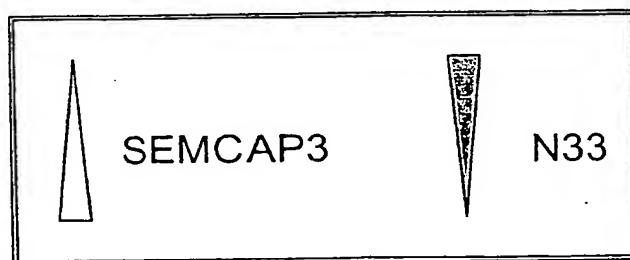
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Figure 1



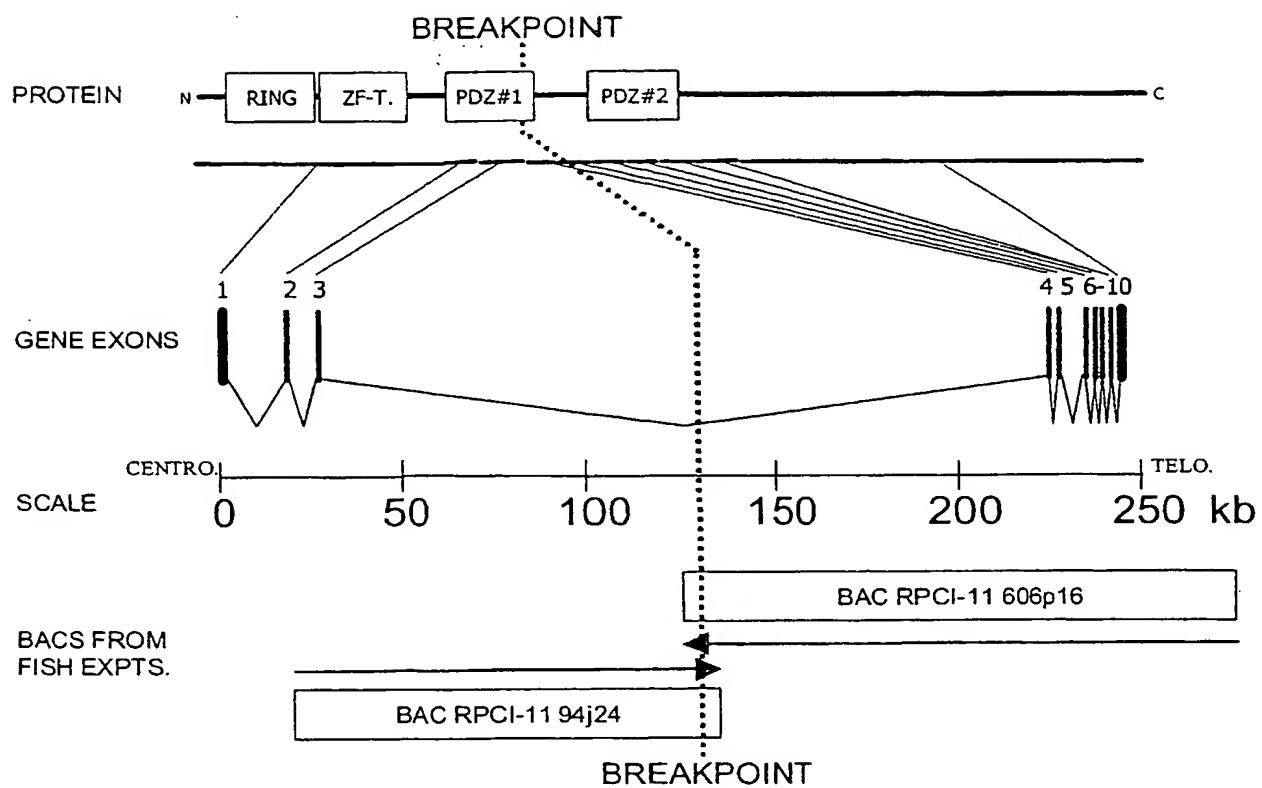
3

8



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Figure 2



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Figure 3

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61 ACAGAACCTC TGGTCAGAAC TGAAAGTTGCA GCCGGAGCTT CCCGCAGGCT CTGTAACCTT
121 CCCTGGAATG AAATAAATAA ATAAAGACCG TAAGTGCTGA GATAGCGGGC CCCAAGATAT
181 TTTTAGTCCT CTGCAATCAG CCACTAGAGG AAGGGGGAGG GAGAAGGGAG TAAAAAAAGTT
241 TTGATCCGTT CGGGAAAGGGG CTCGAAGAGA ACCCTTGGGA GAAAGCAGTA GCCTCAGCTC
301 CAAACTCAGC GAGCTTTCT CGGCTGGGT TTTGTCTCCT ATAGCGTAGA CTGTAAGAGA
361 ACAGAAAGGA GTTTCCCGAG AAGATTCAAGG CTGGCGTCCT GGGCTGGCCC GTCCCTTCTG
421 GCGAGCCTCA GTGTCCTCCC ACGCGCTTCT GCCTTCCAGC CTCCTCCCTT TTTCGGGGGG
481 CTGGCGGGAG GCATCCAAGG CACGATGTAT GTGCGCTCGC GCTCGCGCAA ATACGGCCGG
541 AGGAGTCTTG TTCCCTGGGC ATTTCGGAG GAAGTCTGGA TCAATTAGGC TCAGTCCGGG
601 GAGAGCCAGC GAGCGCGCGG CGGGCGTAGC CGGCCTGTCT GGGCCGCCCTC GTGGGGAGGG
661 AGGGGGCGCC CGGCCGCCCCG CGGGCGACCC CGGGGCCTGG CCGCCACCATGGCTTCGAG
721 CTGGACCGCT TCGACGGCGA CGTGGACCCG GACCTGAAGT GCGCGCTGTG CCACAAGGTC
781 CTGGGAGGACC CGCTGACCAC GCCGTGGGC CACGTCTTCT GCGCCGGCTG CGTGTGCC
841 TGGGTGGTGC AGGAGGGCAG CTGCCCAGCG CGCTGCCGCG GTGCCTGTC GGCAAAGAG
901 CTCAACCACG TCCTGCCGCT CAAGCGCCTT ATCCTCAAGC TGGACATCAA GTGCGCGTAC
961 GCGACGCGCG GCTGCCGCGG GGTGGTCAAG CTGCAGCAGC TGCCGGAGCA CCTCGAGCGC
1021 TGCGACTTCG CGCCCGCGCG CTGTCGCCAC GCGGGTTGCG GCCAGGTGCT GCTGCCGCGC
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1201 GCGCTGCCGG CGCACAAACGG CGCGCTCCAG GCCCGCCTGG GCGCGCTGCA CAAGGCCTC
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4201 TCTTTTATTA AGCATACTTT CACAGAATAA CTTGTTAAA CTATATTCA ATAAAAAAAGT
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4321 GAACCCTATT TTATAATGGT ACGTTACTGA ATGTGTTCA TATGCGTGAC CGTTAAGATA
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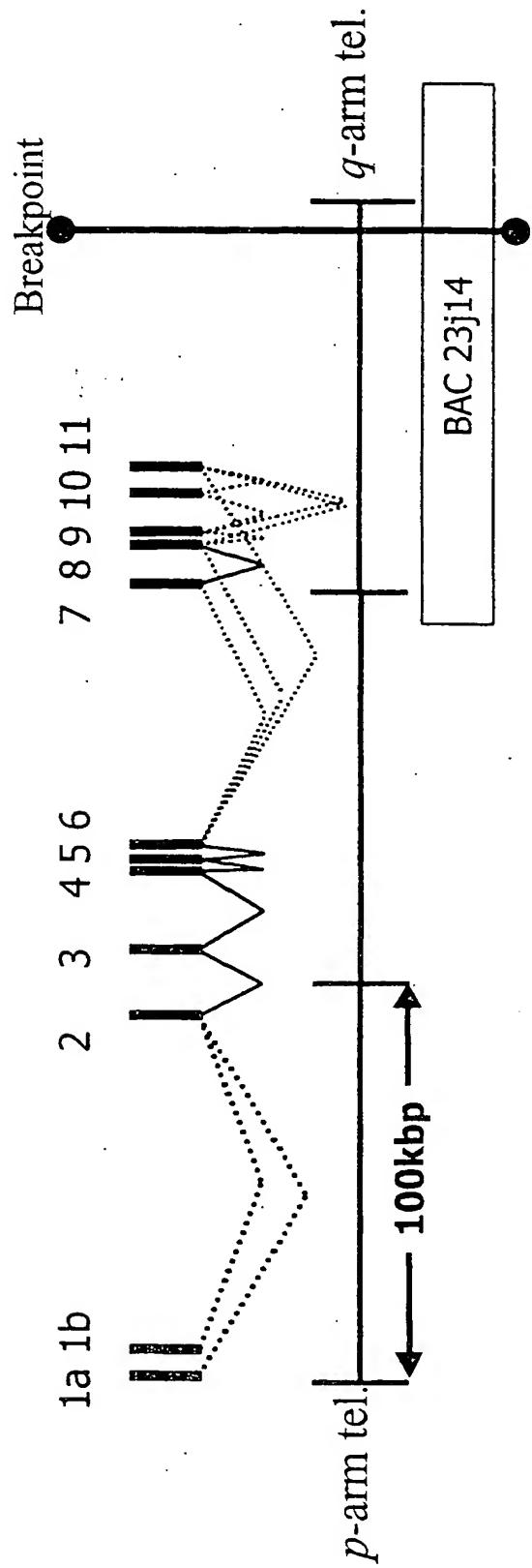
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Figure 4

1 MGFELDRFDG DVDPDLKCAL CHKVLEDPLT TPCGHVFCAG CVLPWVVQEG SCPARCRGRGL
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121 LLRRDVEAHM RDACDARPVG RCQEGCGLPL THGEQRAGGH CCARALRAHN GALQARLGAL
181 HKALKKEALR AGKREKSLVA QLAAAQLELQ MTALRYQKKF TEYSARLDSL SRCVAAPPGG
241 KGEETKSLLT VLHRDGSGLG FNIIGGRPSV DNHDGSSSEG IFVSKIVDSG PAAKEGGLQI
301 HDRIIEVNGR DLSRATHDQA VEAFKTAKEP IVVQVLRRTP RTKMFTPPSE SQLVDTGTQT
361 DITFEHIMAL TKMSSPSPPV LDPLYLLPEEH PSAHEYYYDPN DYIGDIHQEM DREELELEEV
421 DLYRMNSQDK LGLTVCYRTD DEDDIGIYIS EIDPNSIAAK DGRIREGDRI IQINGIEVQ
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781 RAAEGISCPS SEGAVGTTEA YGPASKNLLS ITEDPEVGTP TYSPSLKELD PNQPLESKER
841 RASDGSRSPPT PSQKLGSAYL PSYHHSPYKH AHIPAHAQHY QSYMQLIQQK SAVEYAQSQM
901 SLVSMCKDLS SPTPSEPRME WKVKIRSDGT RYITKRPVRD RLLRERALKI REERSGMTTD
961 DDAVSEMKG RYWSKEERKQ HLVKAKEQRR RREFMMQSRL DCLKEQQAAD DRKEMNILEL
1021 SHKKMMKKRN KKIFDNWMTI QELLTHGTKS PDGTRVYNSF LSVTTV

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Figure 5



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Figure 6

1a

atcttcctcctgctctggctgtgtgaagatctgcctccttcggcttcatgcat
gatcgtaagttcctgaggcctcctcagccatgcttcctgcatagcctgcagaat

1b

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2-6

These exons have been joined together as they are always spliced in this way.

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7

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actga

8

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8+

This is identical to 8 except a cryptic splice acceptor upstream is employed.

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9

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10

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cctcag

11

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aaactgttcctgactttatactatTTGAATTc

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Figure 7

Alternative start exons

1a:

MEWSSRRSIFRMNGDKFRKFIAKPRNYS..... (encoded by exon 2).

1b:

MGARGAPSRRRQAGRRLRYLPTGSEPFLLLCLQLGGGOKKKENLLAEKVEOLMEW
SSRRSIFRMNGDKFRKFIKAPPNYS.....

Transcript options

2-6, 7, 8, 9, 10, 11

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2-6, 7, 8, 9, 11

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2-6, 7, 8, 11

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tgaactctgctcctacattcatgcattttccaaaaggcagacctaagagagactgat
acttttgacctccaaagaattggatttgcagctgagcaactagcaaagtggattgctga
cagaacggatgttcatttcggggtttcagaccaccaactactctggtaccattgctt
tggccctgttagtgtcgcttggaggttgcattttgagaaggacaacttggag
ttcatctataacaagactggttggccatgggtgtctgttatagtcattgtatgac
ttctggccagatgtggaccatccgtggacccatgtcataagaaccacaca
atggacaagtgttaccattctggAACATTGTGTTcagagccagaaaaattaatagat
tttattcacatctatgtctacggcttcgtgacaactactgcagatgccgtatcacca
tggggatggttcttaatgaagcagcaacttcgaaaggcgatgttggaaaaagacgg
acttttaattaaatgaagccaagtggatttgcataaaagtgaatgttaccatgaaga
taaactgttcctgactttatactatttgaattc

(MGARGAPSRRRQAGRRLRYLPTGSFPFLLLLLLCIQLGGGQKKENLLAEKVEQL)M
EWSSRRSIFRMNGDKFRKFIKAPPRNYSMIVMFTALQPQRQCSVCRQANEEYQILANSW
RYSSAFCNKLFFSMVDYDEGTDFQQLNMNSAPTFMHFPPKGRPKRADTFLDQRIGFAA
EQLAKWIADRTDVHIRVFRPPNYSGTIALALLSVLVGGLYLRRNNLEFIYNKTGWAMV
SLCIVFAMTSQMWNHIRGPPYAHKNPHNGQVFNHSGTLCSEPEKLIDFIHIYVYGFLLD
NYCRCRYHHGDGSSK

Figure 8

IAG2_HUMAN
N33_HUMAN
DROS._CG7830
Celegans_g304348
Yeast_Ost3p
Yeast_Ost6p

MAAR-----WRFWCVSVTMVALIVCDVPSASA
MGARGAPSRRRQAGRRLRYLPTGSFPFLLLLCLQLGGG
-----MRLHHKTLLSGLLVVALFAIYAAAQ
-----MLLAVYESAQ
-----MNWLFLVSLVFFCGV
-----MKWCSTYIIIWLAIIFHKF

QRKKE-MVLSEKVSQLMEWTNKRPVIRMGDKFRRLVKAPF
QKKKE-NLLAEKVEQIMEWSSRRSIFRMNGDKFRKFIAPE
SKSKTGLSLEKVQNTVDMNAKKPLLRFNGPKFREYVKSAP
QQT-----LEDKVQNTVDLTSRQSIVKFNMMDKWKTLMQF
STHPALAMSNNRLLKANKSPKK---IIPLKDSSFENILAF
QKSTA---TASHNIDDILQLKDDTGVITVTADNYPLLSRGVP

--RNYSVIVMFALQLHROSVVCKQADEEFQILANSWRYSS
--RNYSMIVVMFALQPQRQCSVERQANEYQILANSWRYSS
--RNYSMIVVMFALAPSRCQICRHADHFIAIVANSYRFSS
--RNYSMIVVMFALSPGVQCPICKPAYDEFMIVANSHYTS
PHENAYIVALFEATAPEIGESICLELESYDTIVASWFDDH
GYFNILYIMRGNTNSNGMSQQLCHDFEKTYHAVADVIRSQA
CYST.

AFTN-----RIEAMVDFDEG----SDVE@MLNNMSAETF
AFCN-----KLEFSMVDYDEG----TDVF@QLNMSAETF
TYSN-----KLEHAMVDFDDG----SEV@OLLRINTAELVF
SEGDRR---KVERGIVDYEAD----PQI@QMNNTAELIL
PDAKSSNSDTSI@TKVNLEDPSKTIPKA@QFFQLNNVBR
PQSLN-----LEFTV@VNEV----PQLVKDLKLQNVPHL

INPAK-GKPKRQDTYELQVRG--FSAEQIARWIADR---
MHPPK-GRPKRADTFDLQRIG--FAAEQLAKWIADR---
MHPPAK-GKPKGADTMIDIHRVG--FAADSIAKFVAER---
YHGPKLGAKKRPEQMDFQRQG--FDADAIGRFVADQ---
FIEKPNSPSILDHSVISISTDTGSERMKQIIQAIKQF---
VVYPPAESNKQSFEWKTSFYQYSLVPENAENTLQFGDFL

-TDVNIRVIRPENYAGPLMLGLLLAVIGGLVYLRRSNMEF-
-TDVHIRVFRP@PNYSGTIALALLVSLVGGLLYLRRNNLEF-
-TDITIRIFR@PNYSGTVMITLVALVGSFLYIRRNNLEF-
-TEHVHRVIRP@PNYTAPVVIALFVALLLGMLYMKRNSLDF-
-SQVNDFSLHEMDWTPIITSTIITFITVLLFKQSKLUMFS
AKILNISITV@QAFNVQEfvyyfVACMVVFIFIKKVI@PKV

*****TM 1*****CCCCCCCCCC

IAG2_HUMAN
N33_HUMAN
DROS._CG7830
Celegans_g304348
Yeast_Ost3p
Yeast_Ost6p

-LFNKTGWAFAALCFVLAMTSGOMWNH[RE]GPEYAHKNPHTG
-IYNKTGWAMVSLCIVFAMTSGOMWNH[RE]GPEYAHKNPHNG
-LYNKNLWGAIAVFFCFAMISGOMWNH[RE]GPEPLVHKS-QNG
-LFNRRTVNGFVCLAITFIFMSSGOMWNH[RE]GPEFMITNPNTK
IISSRII[RE]ATLSTFFIICMISAY[RE]FQIQRNTQLAGVGPKGE
TNWKWLFSMILSLGILLPSIT[RE]YKFVEMNAIDFIARDAKN-
CCCCC*****TM 2*****

IAG2_HUMAN
N33_HUMAN
DROS._CG7830
Celegans_g304348
Yeast_Ost3p
Yeast_Ost6p

HVNYIHGSSQAEFVA[RE]THIVLLFNGGVTLGMVLLCEAATSD
QVSYIHGSSQAEFVA[RE]SHIILVLNAAITMGMVLLNEAATSK
GVAYIHGSSQG[RE]LVVETTYIVMFLNAMIVLGMILLIESGTPK
EPSFIHGSTQFOLIAETTYIVGLLYALIAIGFICVNEAADQS
VMYFLPNEFQH[RE]FAIETQVMVL[RE]YGTLAALVVVLVKGIQFL
RIMYFSGGSGW[RE]FGI[RE]IFSVSLMYIVMSALSVLLIYVPKIS
*****TM 3*****CCCCCCCC

IAG2_HUMAN
N33_HUMAN
DROS._CG7830
Celegans_g304348
Yeast_Ost3p
Yeast_Ost6p

MDIGKR-----KIMCVAGIGLVVL[RE]SWML
GDVGKR-----RIICLVGLGLVV[RE]FLL
AHN-KN-----RIMAMTGLVLLTV[RE]FLL
NSKDRKNAGKKLNPLSLLNIPNTLAIAGLVCICV[RE]FLL
RSHLYP-----ETKKAYFIDAILASFCA[RE]FIYV[RE]AALT
CVSEKMR-----GLLSSFLACVLFY[RE]ESYFI
CCCCCCCCCCCCCCCCCCCC****TM 4*****

TF (3)

SIERSKYHGYEYSFLMS-----
SIERSKYHGYEYSDLDFE-(1)-----
SIERSKAQGYEYISCSNRIDCSPPVQVHPISFL
SIERSKYRGYBYSFLFA-----
TVETIKSPAYEPLLRLSAPFK-----
SCYLIKNP[G]YBIVF-----

FLIK (2)

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Figure 9

C-termini of N33 splice forms

N33_67811_Translated_-_Longe
 N33_67891011_Translated_-_Lo
 N33_678911_Translated_-_Long
 N33_611_Translated_-_Longest
 N33_68+911_Translated_-_Long
 N33_68+11_Translated_-_Longe

N33_67811_Translated_-_Longe
 N33_67891011_Translated_-_Lo
 N33_678911_Translated_-_Long
 N33_611_Translated_-_Longest
 N33_68+911_Translated_-_Long
 N33_68+11_Translated_-_Longe

N33_67811_Translated_-_Longe
 N33_67891011_Translated_-_Lo
 N33_678911_Translated_-_Long
 N33_611_Translated_-_Longest
 N33_68+911_Translated_-_Long
 N33_68+11_Translated_-_Longe

LVSLVGGLLYLRRNNLEFIYNK[REDACTED]GOMWNHIGRPPY
 LVSLVGGLLYLRRNNLEFIYNK[REDACTED]GOMWNHIGRPPY
 LVSLVGGLLYLRRNNLEFIYNK[REDACTED]GOMWNHIGRPPY
 LVSLVGGLLYLRRNNLEFIYNK[REDACTED]GOMWNHIGRPPY
 LVSLVGGLLYLRRNNLEFIYNK[REDACTED]GOMWNHIGRPPY
 LVSLVGGLLYLRRNNLEFIYNK[REDACTED]GOMWNHIGRPPY

AHKNPNGQVSYIHGSSQAQFVAESH[REDACTED]LNEATSKG
 AHKNPHNGQVSYIHGSSQAQFVAESH[REDACTED]LNEATSKG
 AHKNPHNGQVSYIHGSSQAQFVAESH[REDACTED]LNEATSKG
 AHKNPHNGQV[REDACTED]
 AHKNPHNGQVFNHSG---TLCSEPEKLIDFIHIYVYG--FLDNYCRCRY
 AHKNPHNGQVFNHSG---TLCSEPEKLIDFIHIYVYG--FLDNYCRCRY

DVGKRR[REDACTED]
 DVGKRR[REDACTED]ESFLLSIFRSKYHGPYS[REDACTED]
 DVGKRR[REDACTED]ESFLLSIFRSKYHGPYS[REDACTED]

 HHGDGSSK-----
 HHGDGSSK-----

Figure 10

Published GRIK4 nucleic acid sequence (accession NM_014619).

```

1 atgccccgcg tctcgccgccc tttgggtgctg cttcctgcgt ggctcgat ggtcgccctgc
61 agcccgcaact ccttgaggat cgctgtatc ttggacgacc ccatggagtg cagcagaggg
121 gagcggctct ccatcacccct gcccaagaac cgcataacc ggcgtccctga gaggctgggc
181 aaggccaagg tcgaagtggc catctttag cttctcagag acagcgagta cgagactgca
241 gaaaccatgt gtcagatcct ccccaagggg gtggtcgctg tcctcgacc atcgctccagc
301 ccagcctcca gtcacatcat cagcaacatc tgtggagaga aggaggtccc tcacttcaa
361 gtggcccccag aggagttcgta caagttccag ttccagagat tcacaacccct gaacctccac
421 cccagcaaca ctgacatcag cgtggctgta gctgggatcc tgaacttctt caactgcacc
481 accgcctgc tcatctgtgc caaagcagaa tgcctttaa acctagagaa gctgctccgg
541 caattctta tctccaagga cacgcgtgtcc gtccgcacatc tggatgacac ccgggacccc
601 accccgctcc tcaaggagat ccgggacgac aagaccgcca ccatcatcat ccacgccaac
661 gcctccatgt cccacaccat ctcctctgaag gcagccgaac ttggatggt gtcagcctat
721 tacacataca tcttcactaa tctggagttc tcactccaga gaacggacag cttgtggat
781 gategtgtca acatctggg attttccatt ttcaaccaat cccatgtttt ctcccaagag
841 tttggccaga gcctcaacca gtccttggcag gagaactgtg accatgtgac cttcaactggg
901 cctgcgtct ctcggccct gctgtttat gctgtctatg ctgtggac tgcgggtcag
961 gaactgaacc ggagccaaga gatcgccgtg aaggccctgt cctgcggctc ggcccagatc
1021 tggcagcacc gcaccgcct catgactac ctgcgcattt tagaatttggaa aggtcttacc
1081 ggccacattt aattcaacag caaaggccag aggttcaact acgctttgaa aatcttacag
1141 ttcacaagga atggtttcg gcagatcgcc cagtggcact tggcagaggg ctcagcatg
1201 gacagccacc tctatgcctc caacatctcg gacactctt tcaacaccac cctggctgtc
1261 accaccatcc tggaaaaccc atatttaatg ctgaagggga accaccatggaa gatggaaaggc
1321 aatgaccgcgt acgagggttt ctgtgtggac atgtcaagg agtggcaga gatccctccga
1381 ttcaactaca agatccgcgt gttttggat ggcgtgtac ggcgttcccgaa ggccaacggc
1441 acctggacgg gaatgtcggtt ggagctgtac gctaggaaag cagatctggc tggcggcag
1501 ctcaccatta cagctgaacg ggagaagggtt attgtatttc taaaggcattt catgactctg
1561 ggaatttagca ttcttaccg cattcatatg ggacgcacaa cccgcttattt ctcccttcgt
1621 gaccatctt ctccggccgt ctggctcttc atgtttctag cctatctggc cgtcagctgt
1681 gtccttcc tggtgctcg gttgacgccc tacgagtggt acagccacca cccatgtgcc
1741 caggccgggt gcaacctctt ggtgaaccag tactccctgg gcaacaggct ctggttccgg
1801 gtcgggggggt tcatgcagca gggctccacc atgccttc cgccttatac caccgcgtgt
1861 gtcagtggcg tctggggcattc acgtgtatc atcatcatct catcctacac ggccaacctg
1921 gcagccttcc tgaccgtgca ggcgcattt gtcgtggat gtcgtggat agtcagtgaa tgacctggct
1981 gaccagaccc ccattgaata tggcacaatt cacggaggct ccagcatgac ctcttccaa
2041 aattcccgctt accagaccta ccaacgcacatc tggattaca ttttccaa gcagcccagc
2101 gtgttgcgtga agagcacaga ggaggaaatc ggcagggtgt tgaattccaa ctacgccttc
2161 ctccctggaaat ccaccatgaa cggactatc cggcagcgaa actgcacact cactcagatt
2221 gggggccctgc tggacaccaa gggctatggg attggcatgc cagtcggctc gttttccgg
2281 gacgagttt atctggccat tctccagctg caggagaaca accgccttggaa gatccctgaag
2341 cgccaaatggt gggaaaggagg gaagtgcccc aaggaggaag atcacagagc taaaggcctg
2401 ggaatggaga atattgggg aatctttgtg gttcttattt gtggcttaat cgtggccatt
2461 ttatggcta tggatggat tttatggact ctcagacact cagaagcaac tgaggtgtcc
2521 gtctggccagg agatgggtgac cggactgcgc agcattatcc ttttccaa cgtatccac
2581 ccccgccgc ggcgcgcgc agtccccccccc cccggcccc ccatccccca ggagcgcggc
2641 cccggggcga cggcgcgcgt cagcaacggg aagctgtgcg gggcaggggaa gcccgaccag
2701 ctcgcgcaga gactggcgcga ggaggccgc ctggggccc gggctgcac gcacatccgc
2761 gtctggcccg agtgcgcgcg cttccagggc ctgcggcact ggccgtgc gcccgcagc
2821 gaggagagcc tggatgggaa gaaaaccac aacagcagcg agcccgagta g

```

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Figure 11

Published GRIK4 protein sequence (accession NP_055434).

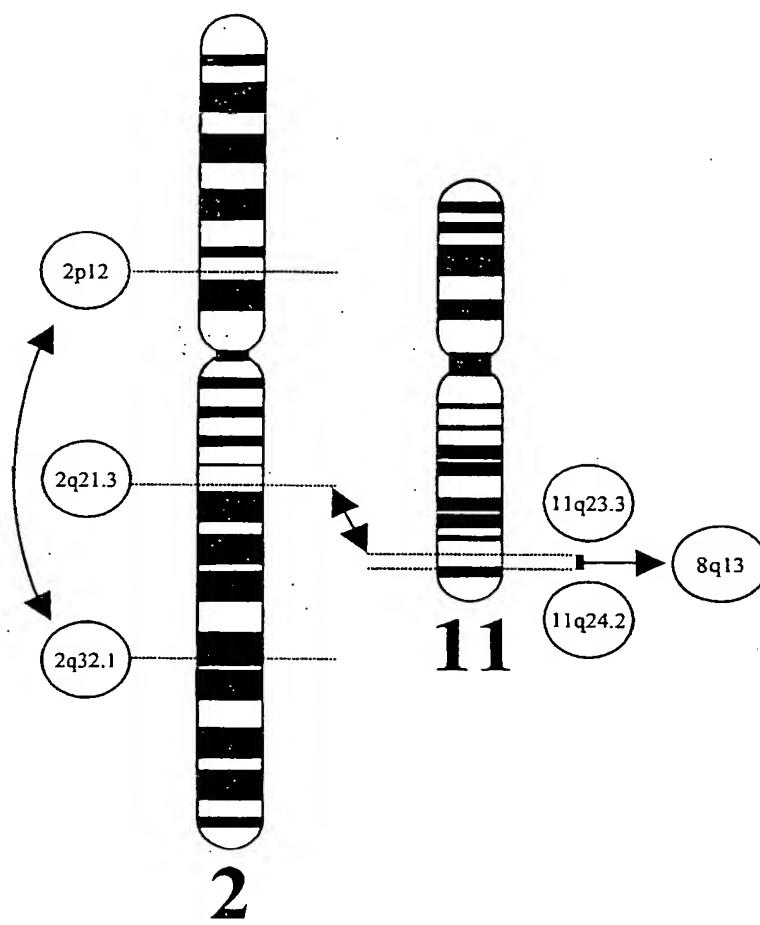
MPRVSAPLVLLPAWLVMVACSPHSLRIAAILDDPMECRGERLSITLAKNRINRAPERL
 GKAKVEVDIFELLRDSEYETAETMCQILPKGVVAVLGPSSSPASSSIISNICGEKEVPH
 FKVAPEEFVKFQFQRFTTLNLHPSNTDISVAVAGILNFFNCTTACLICAKAECLLNLEK
 LLRQFLISKDTLSVRMLDDTRDPTPLLKEIRDDKTATIIIHANASMSHTILLKAAELGM
 VSAYYTIFTNLEFSLQRTDSLVDDRVNILGFSIFNQSHAFFQEFAQSLNQSWQENCDF
 VPFTGPALSSALLFDAVYAVVTAVQELNRSQEIGVKPLSCGSAQIWQHGTSLMNYLRMV
 ELEGLTGHIENSKGQRSNYALKILQFTRNGFRQIGQWHVAEGLSMDSHLYASNISDTL
 FNTTLVVTTILENPYLMKGHNQEMEGNDRYEGFCVDMKELAEILRFNYKIRLVGDGV
 YGVPEANGTWTGMVGELIARKADLAVAGLTITAEREKVIDFSKPFMTLGISILYRIHMG
 RKPGYFSFLDPFSPGVWLFMLLAYLAVSCVLFLVARLTPYEWSPHPCAQGRCNLLVNQ
 YSLGNSLWFPVGGFMQQGSTIAPRALSTRCVSGVWWAFTLIIISSYTANLAFLTQRM
 DVPIESVDDLADQTAIEYGTIHGSSMTFFQNSRYQTYQRMWNMYMKQPSVFVKSTEE
 GIARVLNSNYAFLLESTMNEYRQRCNCNLQTIGGLDTKGYGIGMPVGSVFRDEFDLAI
 LQLQENNRLIEILRKWWEGGKCPKEEDHRAKGLGMENIGGIFVVLICGLIVAIFMAMLE
 FLWTLRHSEATEVSVCQEMVTELRSIILCQDSIHPRRRRAAVPPPRPPIPEERRPRGTA
 TLSNGKLCGAGEPDQLAQRLAQEAALVARGCTHIRVCPECRRFQGLRARPSPARSEESL
 EWEKTTNSSEPE

Figure 12

Cytogenetic Position	Description	Breakpoint YAC Clones	Breakpoint BAC Clones (Acc. No.)
2p12	Inversion breakpoint	915_f_7	-
2q32.1	Inversion breakpoint	941_h_12	RP11-358M9 (AC020595)
2q21.3	Translocation breakpoint	766_c_12	RP11-250H22 (AC011996)
11q23.3	Upper insertion breakpoint	936_d_9	RP11-89P5 (AC009641)
11q24.2	Translocation/Insertion breakpoint	749_d_2	RP11-687M24 (AP001007)

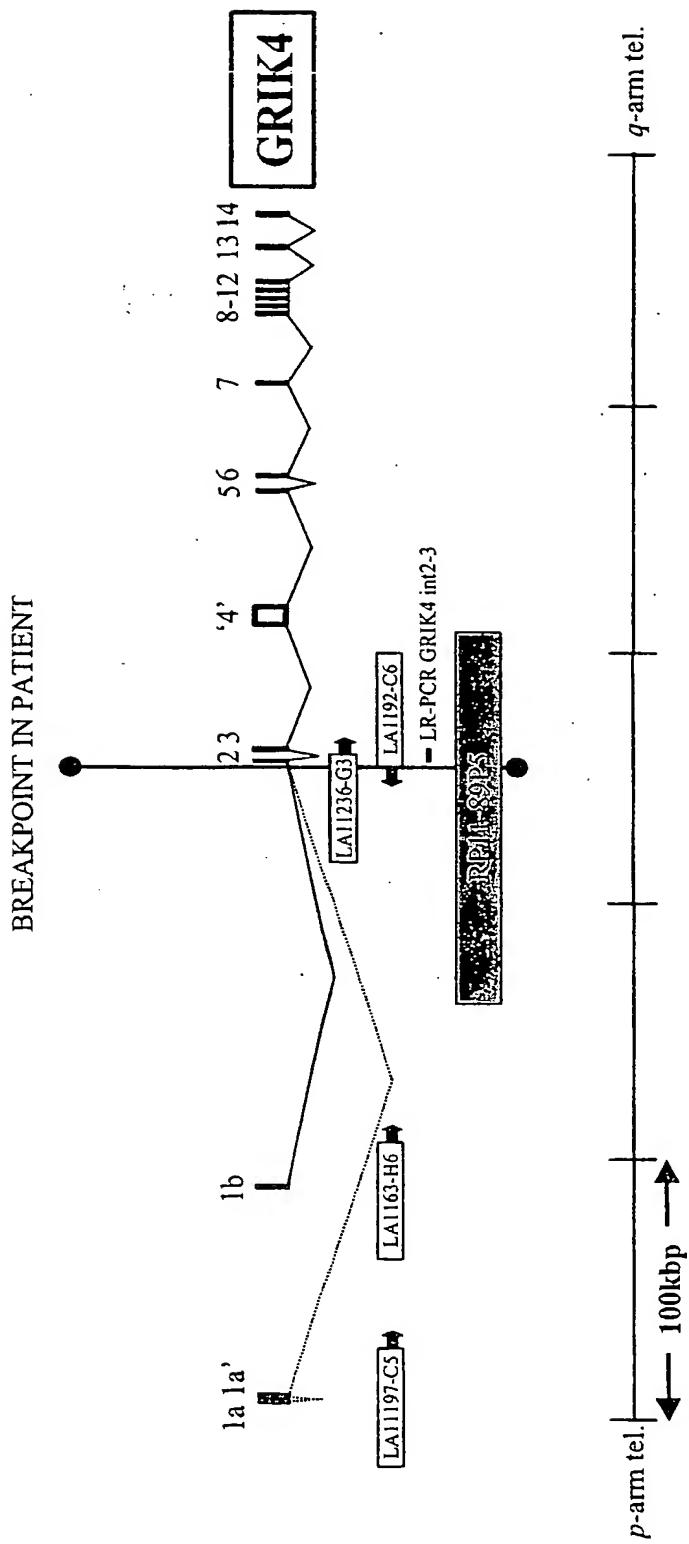
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Figure 13



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Figure 14



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Figure 15

Exon 1a

GCGTGGTAGCATGTGCCTGTAATCCAGTGCTTGGACACCGAGGCAGGAGGATCACT
CGAGCCCAGGAGTGCGAGGCTGCAgtgagttatgatcatac

Exon 1a'

agatttgctctctgccaqGTGACGCTAGACTCAGGAAGACCCCCCATTCTGCTCC
 ACTCCTGGGCTTGGAGAAGAGTACAGCTGCTCTGACTGGTGGGACCTTTGCTGGCTA
 GGGGTGATGGGAGAAGCAAGAGAGGGATCCACACACCTGCGCTTAGCTTCTATGACCT
 GGGCGGATGGAGGCCAAAGgtaagg~~tggatgaga~~

M E A K A

Exon 1b

CCATGAGGATTCATAGAACGATGCCCGCGTCTGGCGCCTTGGTGCCTGCCTGCCTGCGT
 M P R V S A P L V L L P A W
 GGCTCGTGTGGTCGCCTGCAGCCCGACTCCTTGAGGATCGgtaagtgtggcccagct
 L V M V A C S P H S L R I A

Exon 2

gaaaccccccccccaqCTGCTATCTTGGACGACCCATGGAGTGCAGCAGAGGGAGCGGC
 A I L D D P M E C S R G E R L
 TCTCCATCACCCCTGGCCAAGAACCGCATCAACCGCGCTCCTGAGAGGCTGGCAAGGCC
 S I T L A K N R I N R A P E R L G K A
 AAGGTGAAGTGGACATTTGAGCTCTAGAGACAGCGAGTACGAGACTGCAGAAC
 K V E V D I F E L L R D S E Y E T A E T

CAgtacgttagactgg
 M

Figure 16

Alternative nucleic acid sequence. Exons 1a-1a'-2-etc.

1 gctgtggtagc atgtgcctgt aatcccagtg ctttggaca ccgaggcagg aggatcactc
 61 gagcccagga gtgcgaggct gcagtgcacgc tagacttcag gaàgaccccc catttctgt
 121 ccactcctgg gcttggagaa gactacagct gctttgact ggtgggacct tttgctggct
 181 aggggtatgg ggagaagcaa gagaggggatc cacacacctg cgcttagct tctatgacct
 241 gggcgatgg aggccaaagc tgctatctt gacgacccca tggagtgcag. cagaggggag
 301 cgctctcca tcaccctggc caagaaccgc atcaaccgcg ctcctgagag gctgggcaag
 361 gccaaggctcg aagtggacat cttttagctt ctcagagaca gcgagatcga gactgcagaa
 421 accatgtgtc agatccccc caaggggggtg gtcgctgtcc tcggaccatc gtccagccca
 481 gcctccagct ccatcatcg caacatctgt ggagagaagg aggtccctca ctccaaagtg
 541 gcccccaggagg agttcgtaa gttccagttc cagagattca caaccctgaa cctccacccc
 601 agcaacactg acatcagct ggctgttagct gggatcctga acttcttcaa ctgcaccacc
 661 gcctgcctca tctgtgccaa agcagaatgc cttttaaacc tagagaagct gctccggcaa
 721 ttcccttatct ccaaggacac gctgtccgtc cgcatgctgg atgacacccg ggacccacc
 781 ccgctcctca aggagatccg ggacgacaag acccccacca tcatcatcca cgccaaacgcc
 841 tccatgtccc acaccatctt cctgaaggca gccgaacttg ggatgggtgc agcttattac
 901 acatacatct tcaactaatct ggagttctca ctccagagaa cggacagctt tggatgat
 961 cgtgtcaaca tcctgggatt ttccattttc aaccaatccc atgctttttt ccaagagtt
 1021 gcccaagagcc tcaaccatgc ctggcaggag aactgtgacc atgtgcctt cactggcct
 1081 ggcgtctctt cggccctgtc gttttagtgc gtctatgtc tggtgactgc ggtgcaggaa
 1141 ctgaacceggaa gccaagagat cggcgtgaag cccttgcct gccgctcggc ccagatctgg
 1201 cagcacggca ccagccatcat gaactacctg cgcatggtag aatttggaaagg tcttaccggc
 1261 cacattgaat tcaacacgaa aggccagagg tccaaactacg ctttggaaaat cttacagttc
 1321 acaaggaatg gttttcggca gatcggccag tggcacgtgg cagaggccct cagcatggac
 1381 agccacctct atgcctccaa catctcgac actctcttca acaccaccc ggtcgtcacc
 1441 accatcctgg aaaaccata tttaatgtcg aaggggaacc accaggagat ggaaggcaat
 1501 gaccgctacg agggcttctg tggacatgc ctcaaggagc tggcagagat cctccgattc
 1561 aactacaaga tccgcctgtt tggggatgac gttgtacggcg ttcccggagc caacggcacc
 1621 tggacgggaa tggtcgggaa gctgtatgcg aggaaagcag atctggctgt ggcaggcctc
 1681 accattacag ctgaacggga gaaggtgatt gatttctcta agccattcat gactctgggaa
 1741 attagcattt tttaccgcatt tcatatggga cggaaaccccg gctatttctc cttcctggac
 1801 ccattttctc cgggcgtctg gctttcatg cttcttagct atctggccgt cagctgtgtc
 1861 ctcttcctgg tggctcggtt gacgcctctac gagttgtaca gcccacaccc atgtgcccag
 1921 gggcggtgca acctctgtt gaaaccgtac tccctggca acagccttg gtttccggtc
 1981 ggggggttca tgcagcaggg ctccaccatc gcccctcgcg ccttacccac cccgtgtgtc
 2041 agtggcgctc ggtggcatt caccgtgtc atcatctcat cctacacggc caacctggca
 2101 gccttcctga cccgtcagcg catggatgtg cccattgtg cagtggatga cctggctgac
 2161 cagacccgca ttgaatatgg cacaattcac ggaggctcca gcatgacctt cttccaaaat
 2221 tcccgctacc agacccatcca acgcgtgtt aattacatgt attccaaagca gcccacgtg
 2281 ttcgtgaaga gcacagagga gggaaatcggc agggtgttga attccaaacta cgccttcctc
 2341 ctggaaatcca ccatgaacga gtactatctt cagcggaaact gcaacctcac tcagattggg
 2401 ggcctgctgg acaccaaggaa ctatgggatt ggcacgtccag tggctcggt tttccggac
 2461 gagtttgatc tggccatttc ccacgtcgag gagaacaacc gcttggagat cctgaagcgc
 2521 aaatggggg aaggagggaa gtgcggccaaag gaggaagatc acagagctaa aggctggga
 2581 atggagaata ttgggtggaaat ctttggggat cttatttgtg gcttaatctgt ggcattttt
 2641 atggctatgt tggagttttt atggactctc agacactcg aagcaactga ggtgtccgtc
 2701 tgccaggaga tggtgaccga gtcgtcgacg attatctgt gtcaggacag tateccacccc
 2761 cggccggccgc ggcggcagt cccggccccc cggccccccca tccccggagga ggcggcaccg
 2821 cggggcacgg cgacgtcgat caacggggaaat ctgtgggggg cagggggcc cgaccagctc
 2881 ggcacggac tggcgccaggaa ggccggccctg gtggcccgcc gctgcacgca catccgcgtc
 2941 tgccccggat ggcgcgcctt ccaggccctg cgggcacggc gtcggccgc cccgacgcgag
 3001 gagagcctgg agtgggagaa aaccaccaac agcagcggc ccgagtag

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Figure 17

Complete alternative protein sequence

MEAKAAILDDPMECRSRGERLSITLAKNRINRAPERLGAKVEVDIFELLRDSEYETAET
MCQILPKGVVAVLGPSSPASSIIISNICGEKEVPHFKVAPEEFVKFQFQRFTTLNLHP
SNTDISVAVAGILNFFNCTTACLICAKAECLLNLEKLLRQFLISKDTLSVRMLDDTRDP
TPLKEIRDDKTATIIIHANASMSHTILLKAAELGMVSAYYTYIFTNLEFSLQRTDSLVD
DDRVNILGFSIFNQSHAFFQEFAQSLNQSWQENC DHVPFTGPALSSALLFDavyavvta
VQELNRSQEIGVKPLSCGSAQIWQHGTSLMNYLRMVELEGLTGHIEFNSKGQRSNYALK
ILQFTRNGFRQIGQWHVAEGLSMDSHLYASNISDTLFNTTLVVTTILENPYLMKGNHQ
EMEGNDRYEGFCVDMLKELAEILRFNYKIRLVGDGVYGVPEANGWTGMVGELIARKAD
LAVAGLTITAEREKVIDFSKPFMTLGISILYRIHMGRKPGYFSFLDPFSPGVWLFMLLA
YLAVSCVLFLVARLTPYEWYSPHPCAQGRCNLLVNQYSLGNSLWFPVGGFMQQGSTIAP
RALSTRCVSGVWWAFTLIIISYYTANLAALTVQRMDVPIESVDDLAQTAIEYGTIHG
GSSMTFFQNSRYQTYQRMWNMYMSKQPSVFVKSTEEDIARVLSNYAFLLESTMNEYR
QRNCNLTQIGGLLDTKGYGIGMPVGSVFRDEFDLAILQLQENNRLIELKRKWEGGKCP
KEEDHRAKGLGMENIGGIFVVLICGLIVAFMAMLEFLWTLRHSEATEVSVCQEMVTEL
RSIILCQDSIHPRRRRAVPPPRPIPEERRPRGTATLSNGKLCGAGEPDQLAQRQLAQE
AALVARGCTHIRVCPECRRFQGLRARPSPARSEESLEWEKTTNSSEPE

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Figure 18

NPAS3 (NM_022123) nucleic acid sequence (spliceform 1b-3-4etc)

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1 ccacgcgtcc gacgcccccc acccgggagg ggggagagag gcaaaaagta agagaggaaa
61 aaaaatagca ggaagatggc gcccacccaag cccagcttc agcaggatcc ttccaggcga
121 gaacgtttac aaggatttag aaggagaaa tccccagatg ctgtcgctc cccgggggaa
181 aaagaaaaact ttgaggctta tgaattggcc aagtttgtgc cttttcctgc agccattacc
241 agccagctcg acaaggcatc catcattcga ctttacaattt gctatctgaa aatgagggac
301 tttgctaacc agggggaccc tccgtggaac ttgcaaatgg aaggccctcc acctaacaca
361 tcagtaaaag gtgcacagcg aaggagaagc cccagtgcac tagccatgaa agtatttgaa
421 gcacatggg gaagccacat tttgcagttc ctggatggct ttgtatttgc actaaatcag
481 gaaggaaaat ttttgatcat ttccgaaaca gtctccatct accttaggcct ctcacaatgt
541 gagctgacag gcagcagtgt ctttgcattt gtccaccccg gagatcacgt ggagatggct
601 gacgacgtgg gcatgaagct cccccctggg cggggctcc tgtcacaggg cactgctgag
661 gacggagcca gctcagcatac ttccctccct cagtcggaga ccccccggcc agtggagtca
721 accagccccca gtctgtaac cactgacaaac actcttgagc ttccctttt catccgaatg
781 aaatctactc tgaccaaaccg cgggtgtgcac atcaatcat caggatataa ggtgattcac
841 ataacacggcc ggtacgcct gagagtgtcg ctgtcccaacgg ggaggacgt cccagccaa
901 atcatgggtc tcgtgttgt tgcgcatgcc ttgcctcccc ctacgatcaa tgaagtcaga
961 attgactgcc atatgttgcgt cactcgatgaa aatatggacc tcaatatcat ttactgtgaa
1021 aataggatttta gtgatttatat ggatctgacc cctgtagata tcgttagggaa gagatgtac
1081 cacttcatcc atgctgaaagc cgtggaggcc atcaggcaca gtcacttggc ttgtctgaat
1141 aagggtcagt gtgtgacaaa gtactatcgc tggatgcaga agaacggagg atatatttgg
1201 atacagtccca gtgccaccat agcttataat gccaagaatg caaatgaaaaa gaatatcatc
1261 tgggtgaatt accttcttag caatcttgcac tacaaggaca caccatggg catcgacag
1321 ctccccatcc tgccggagaa aacttccgaa tcctcggaga catccgactc tgagtccag
1381 tctaaagaca cctcaggtat tacagaggac aacgagaact ccaagtccga cgagaagggg
1441 aaccagtccg agaacagcg aagcccgag cccgaccggc agaagtccgg caacgcgtgt
1501 gacaacgaca tgaactgcaa cgacgacggc cacagctcca gtaacccggc cagccgcac
1561 agcgacgaca gcttcgagca ctcggactt gagaacccca aggccggcga ggacggcttc
1621 ggtgctctgg ggcgcgtgc gatcaagggt gaggcgtacg tggagagcga gtccgacatg
1681 cgctgcaga actgcgagtc actcacgtcc gacagcggca aggactcggc cagcgcaggc
1741 gaggccggcgc cgccaggctc cagcaaggcac cagaagcgcg agaaaaggcg gaaacggcaa
1801 aaggccggca ggcgcaggcc cggccgcctg tccagcgcgt cgagccagg cggcctggac
1861 gccccctgg tggaggccccc gcccgtctg tccctccccca acagtccctc ggtgctcaag
1921 atcaagacgg agatctcaga accccatcaat ttgcacaatg acagcagcat ctgaaactac
1981 ccgcaccaacc gggagatctc caggaacgag tccccctaca gcatgaccaa gccccccagc
2041 tctgagact tccccctccc gcaggccggc ggcgggtgggg gtggccgtgg cggggggctg
2101 cacgtggcca ttecccactc ggtcctcacc cccgcggcgc cgcacggcgc ggcgcggcgc
2161 aagactcagt tcggccctc ggcacccggc gcccctggcc cgtcgccctc cgacccgcgt
2221 tcaccccccgc tctcgccgtc cccgcgggac aagcaccccg ggaacggcgg cggggggcgg
2281 ggcggggggcgc gggccggggc gggccggcgc cccagcgcgt ccaactccct gctgtacact
2341 ggggacctgg aggccgtcga gaggttgcag gcccggcaacg tctgtctccc gctgggtgcac
2401 agggtgaccg ggaccctggc cgccaccaggc acggccggc agagggtctca caccacgggc
2461 accatccgcg acgcgcggc cggagggtgacc ctggccatgc agagcaacct gctgcccac
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2641 gcagtggcg cagctgcct gacgcagatg cccggccggca acgtgttcac cacggccggag
2701 ggacttctcc ccacgtgcctt ccacgtgcctt ttcacgtcaacg gcatccacgc ggcacagact
2761 ctggagcgcg aggaggactg aggccggcc cgtcctggc cccggccaggc cccgcttggaa
2821 ggaggcatcg tcggcatggg cgttttagacc tttaatttca gcaacttggaa ttgcagcagg

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2881 tcagcgtctt ctctcgccac gacggcccc attccacccc ctcttcctt cacctgactt
2941 attcttttgt gtaaaagatat gtttatttt tgccttcaga gggtcagacg accagttgcc
3001 tgccgttttg tcttcattcta aggtgtgtgt tgggttgtt tgcttcctt tgcatctta
3061 ttaagatgtc ttcatgtgt atatgcctc gccatagaat actcagttt gtggtaaga
3121 gagttctcaa gtgacaacca ttgggttcc ttcataaaga tcttgatatg atcaagatgg
3181 aaagagacaa gcataaacaa tgtgcctgt ttgactaagt caaatgaaat agggtggttt
3241 ttgtttctgt tcctaattcc tttaaaaaat aggggaata gtattttaga attttatgca
3301 gaatttaatt ctcttttac ggtaagatt ttaagattt cttaacttgcataaaaaata
3361 atttgggttc ttaaacttaa ttctggcct gtgactagaa tgtttaaaaa aaaaaaaaaac
3421 cctcgtgc

Figure 19

NPAS3 protein sequence (spliceform 1b-3-4etc.)

MAPTKEPSPOODPSKRRRLQALRKEKSRAARSRRGKENFEFYELAKLLPLPAITSQLD
KASIIRLTISYLMRDFANQGDPPWNLRMEGPPPNTSVKGAQRRRSPSALAIEVFEAHL
GSHILQSLDGTVFALNQEKGFLYISETVSIYLGLSQVELTGSVFDYVHPGDHVEMAEQ
LGMKLPPGRGLLSQGTAEDEGASSASSSSQSETPEPVESTSPSLLTDNTLERSFFIRMK
STLTKRGVHIKSSGYKVIIHITGRLRLRVSLSHGRTVPSQIMGLVVVAHALPPPTINEVR
IDCHMFVTRVNMDLNIIYCENRISDYMDLTPVDIVGKRCYHFIHAEDVEGIRSHLDLL
NKGQCVTKYYRWMQKNGGYIWIQSSATIAINAKANEKNIIWVNLYLNSPEYKDTPMDI
AQLPHLPEKTSESSETSDSESDSKDTSGITEDNENSKSDEKGNQSENSEDPEPDRKKSG
NACDNDMNCNDGHSSSNPDSRDSDDSFEHSDFENPKAGEDFGALGAMQIKVERYVES
ESDLRLQNCESLTSDSAKDSDSAEGAAQASSKHQKRKKAKRQKGGASRRLSSASS
PGGLDAGLVEPPRLLSSPNSASVLKIKTEISEPINFDNDSSIWNYPNREISRNEPYS
MTKPPSSEHFPSHQGGGGGGGGGLHVAIPDSVLTTPGADGAAARKTQFGASATAALA
PVASDPLSPPLSASPDKHPGNGGGGGGGGAGGGGPSASNLLYTGDLEALQRLQAG
NVVLPLVHRVTGTLAATSTAAQRVYTTGTIRYAPAEVTLAMQSNNLPNAHAVNFVDVNS
PGFGLDPKTPMEMLYHHVHRLNMSGPFGGAVSAASLTQMPAGNVFTTAEGLFSTLPFPV
YSNGIHAAQTLERKED

Figure 20

NPAS3 nucleic acid sequence (spliceform incorporating exons 1a-2-3-4etc) similar to mouse cDNA with accession number NM_013780)

```

1 ATGGGGAGGG CCGGCCGC GGCCAACGGC ACCCCGCAGA ACGTCCAGGG CATCACCTCC
61 TACAGCAGC GAATAACTGC CCAGCATCCT CTGCCCACCC AATCAGAATG TAGGAAAATC
121 TACAGATATG ACGGAACTCA CTGTGAATCT ACCTTACCGAGA ATTTACAAGG ATTGAGAAAG
181 GAGAAATCCC GAGATGCTGC TCGCTCCCGC CGGGAAAAG AAAACTTTGA GTTCTATGAA
241 TTGGCCAAGT TGTTGCCTCT TCCTGCAGCC ATTACCAGCC AGCTCGACAA GGCATCCATC
301 ATTGACTTA CAATTAGCTA TCTGAAAATG AGGGACTTTG CTAACCAGGG GGACCCCTCCG
361 TGGAACCTGC GAATGGAAGG CCCTCCACCT AACACATCAG TAAAAGGTGC ACAGGGAAGG
421 AGAAGCCCCA GTGCACTAGC CATTGAAGTA TTTGAAGCAG ATTGGGAAGG CCACATTTTG
481 CAGTCCCTGG ATGGCTTTGT ATTTGCACTA AATCAGGAAG GAAAATTTT GTACATTTCC
541 GAAACAGTCT CCATCTACCT AGGCCTCTCA CAAGTGGAGC TGACAGGCAG CAGTGTCTTT
601 GACTATGTCC ACCCCGGAGA TCACGTGGAG ATGGCTGAGC AGCTGGGCAT GAAGCTCCCC
661 CCTGGGCGGG GTCTCCTGTC ACAGGGCACT GCTGAGGACG GAGCCAGCTC AGCATCTTCC
721 TCCTCTCACT CGGAGACCCC CGAGCCAGTG GAGTCAACCA GCCCCAGTCT GCTAACCACT
781 GACAACACTC TTGAGCGTTT CTTTTTCATC CGAATGAAAT CTACTCTGAC CAAACGCGGT
841 GTGCACATCA AATCATCAGG ATATAAGGTG ATTACACATAA CAGGCCGGCT ACGCCTGAGA
901 GTGTCGCTGT CCCACGGGAG GACCGTCCCC AGCCAAATCA TGGGTCTCGT GGTGTTGCG
961 CATGCCTTGC CTCCCCCTAC GATCAATGAA GTCAGAATTG ACTGCCATAT GTTCGTCACT
1021 CGAGTAAATA TGGACCTCAA TATCATTAC TGTGAAAATA GGATTAGTGA TTATATGGAT
1081 CTGACCCCTG TAGATATCGT AGGGAAGAGA TGCTACCACT TCATCCATGC TGAAGACGTG
1141 GAGGGCATCA GGCACAGTCA CTTGGACTTG CTGAATAAGG GTCAGTGTGT GACAAAGTAC
1201 TATCGCTGGA TGCAGAAGAA CGGAGGATAT ATTTGGATAC AGTCCAGTGC CACCATAGCT
1261 ATTAATGCCA AGAATGCAA TGAAAAGAAT ATCATCTGGG TGAATTACCT TCTTAGCAAT
1321 CCTGAGTACA AGGACACACC CATGGACATC GCACAGCTCC CCCATCTGCC GGAGAAAAC
1381 TCCGAATCCT CGGAGACATC CGACTCTGAG TCAGACTCTA AAGACACCTC AGGTATTACA
1441 GAGGACAACG AGAACTCCAA GTCCGACGAG AAGGGGAACC AGTCCGAGAA CAGCGAAGAC
1501 CCGGAGCCCG ACCGGAAGAA GTCGGGCAAC GCGTGTGACA ACGACATGAA CTGCAACGAC
1561 GACGGCCACA GCTCCAGTAA CCCGGACAGC CGCGACAGCG ACGACAGCTT CGAGCACTCG
1621 GACTTGAGA ACCCCAAAGGC GGGCGAGGAC GGCTTCGGT CTCTGGCGC GATGCAGATC
1681 AAGGTGGAGC GCTACGTGGA GAGCGAGTCG GACCTGCGC TGCAAGACTG CGAGTCACTC
1741 ACCTCCGACA GCGCCAAGGA CTCGGACAGC GCAGGGAGG CGGGCGCGCA GGCCTCCAGC
1801 AAGCACCAGA AGCGCAAGAA AAGGCGGAAA CGGCAAAAGG GCGGCAGCGC CAGCCGCCGG
1861 CGCCTGTCCA GCGCGTCGAG CCCAGCGGC CTGGACGCGG GCCTGGTGGA GCCCCCGCGG
1921 CTGCTGTCTT CCCCCAACAG TGCCTCGGT CTCAAGATCA AGACGGAGAT CTCAGAACCC
1981 ATCAATTTCG ACAATGACAG CAGCATCTGG AACTACCCGC CCAACCGGGA GATCTCCAGG
2041 AACGAGTCCC CCTACAGCAT GACCAAGCCC CCCAGCTCTG AGCACTTCCC GTCCCCCGCAG
2101 GGGGGCGGG GTGGGGGTGG CGGTGGCGGG GGGCTGCACG TGGCCATTCC CGACTCGGTC
2161 CTCACCCCGC CCGGCCGCCA CGCGCGGGC GCCCCGAAGA CTCAGTTCGG CGCCTCGGCC
2221 ACCCGGCCCG TGGCCCCCGT CGCCTCCGAC CGCCTGTAC CCCCCTCTC GGCCTCCCCG
2281 CGGGACAAGC ACCCCCCGGAA CGCGGGCGGG GGGGGGGCG GGGGCGGGCG CGGGGGGGGC
2341 GCGGGCCCCA GCGCGTCCAA CTCTTGTCTG TACACTGGG ACCTGGAGGC GCTGCAGAGG
2401 TTGCAAGCGG GCAACCTCGT GCTCCCGCTG GTGCACAGGG TGACCGGGAC CCTGGCGGCC
2461 ACCAGCACGG CGCGCGAGAG GGTCTACACC ACGGGCACCA TCCGCTACGC GCCCGCCGAG
2521 GTGACCCCTGG CCATGCAAGAG CAACCTGTCTG CCCAACGCGC ACGCTGTTAA CTTCGTGGAC
2581 GTTAACAGCC CGGGCTTTGG CCTCGACCCC AAGACGCCA TGGAGATGCT CTACCACAC
2641 GTGCACCGGC TCAACATGTC AGGACCGTTC GGCAGCGCAG TGAGCGCAGC TAGCCTGACG
2701 CAGATGCCCG CGGGCAACGT GTTCACCAAGC GCGGAGGGAC TCTTCTCCAC GCTGCCCTTC
2761 CCCGTCTACA GCAACGGCAT CCACGCGGC AAGACTCTGG AGCGCAAGGA GGACTGAGGC
2821 GCCGCCCGTC CTGGGGCCGG CGAGGCCCG CTTGGAGGAG GCATCGTCGG CATTTCGTT

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2881 TAGACCTTTA ATTCTAGCAC TTTGAATTCG AGCAGGTCAG CGTCTTCTCT CGCCACGACG
2941 GTCCCCATTC CACCCCTCT T

Figure 21

NPAS3 protein sequence of spliceform incorporating exons 1a-2-3-4etc.

MGRAGAAANGTSQNMQGHSYVQPRATTAGHPLPNOSECRKSVPAQDLYCESTMNTQALR
KEKSRAARSRRGKENFEFYELAKLLPLPAITSQLDKASIIRLTISYLKMRDFANQGD
PPWNLRLMEGPPPNTSVKGAQRRRSPSALAIEVFEAHLGSHILQSLDGTVFALNQEGKFL
YISETVSIYLGLSQVELTGSSVFDYVHPGDHVEMAEQLGMKLPPGRGLLSQGTAEDGAS
SASSSSQSETPEPVESTSPSLLTDNTLERSFFIRMKSTLTKRGVHIKSSGYKVIIHTG
RLRLRVSLSHGRTPVPSQIMGLVVVAHALPPPTINEVRIDCHMFVTRVNMDLNIIYCENR
ISDYMMLTPVDIVGKRCYHFIHAEDVEGIRHSHLDLLNKQCVTKYYRWMQKNGGYIWI
QSSATIAINAKNANEKNIIWVNLYLLSNPEYKDTPMDIAQLPHLPEKTSSESSETSDSESD
SKDTSGITEDNENSKSDEKGNQSENSEDPEPDRKKSGNACNDMNCNDDGHSSNPDSR
DSDDSFHSDFENPKAGEDFGALGAMQIKVERYVESESDLRLQNCESLTSDSAKDSDS
AGEAGAQASSKHQKRKKRKQKGGSASRRRLSSASSPGGLDAGLVEPPRLLSSPNSAS
VLKIKTEISEPINFDNDSSIWNYPPNREISRNESPYSMTKPPSSEHFPSHQGGGGGGGG
GGGLHVAIPDSVLTTPGADGAAARKTQFGASATAALAPVASDPLSPLSASPRDKHPGN
GGGGGGGGGGAGGGGPSASNLLYTGDLEALQRLQAGNVVLPLVHRVTGTLAATSTAAQ
RVYTTGTIRYAPAEVTLAMQSNLLPNAHAVNFVDVNSPGFGLDPKTPMEMLYHHVHRLN
MSGPFGGAVSAASLTQMPAGNVFTTAEGLFSTLPFPVYSNGIHAAQTLERKED

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Figure 22

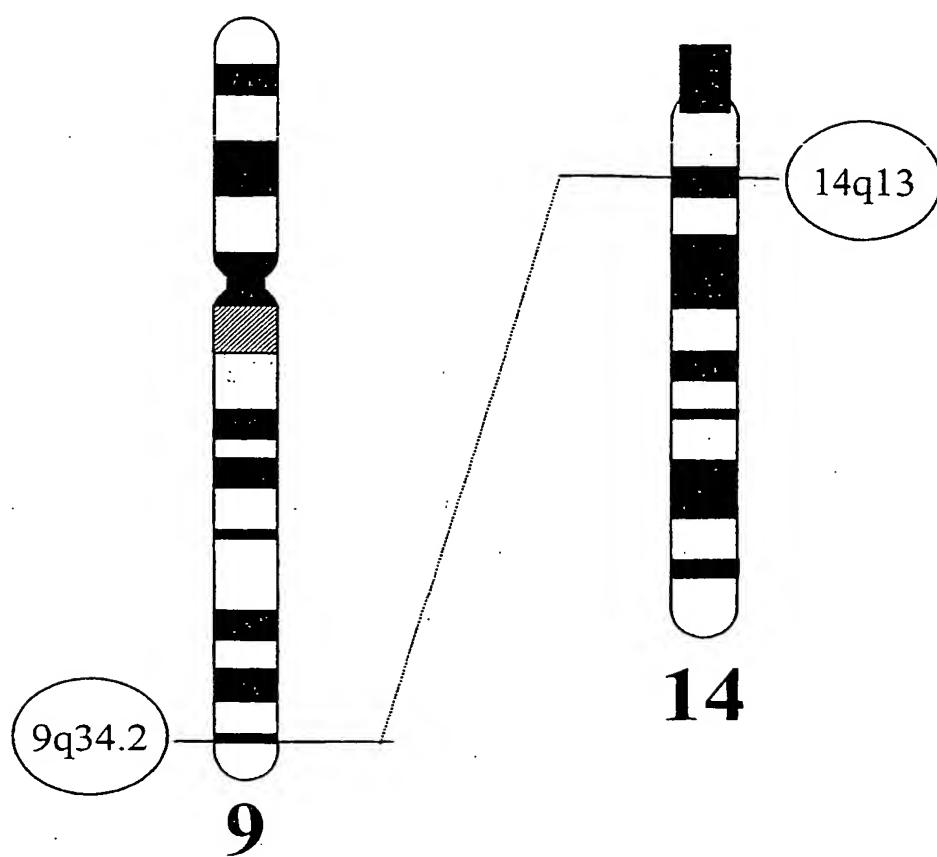
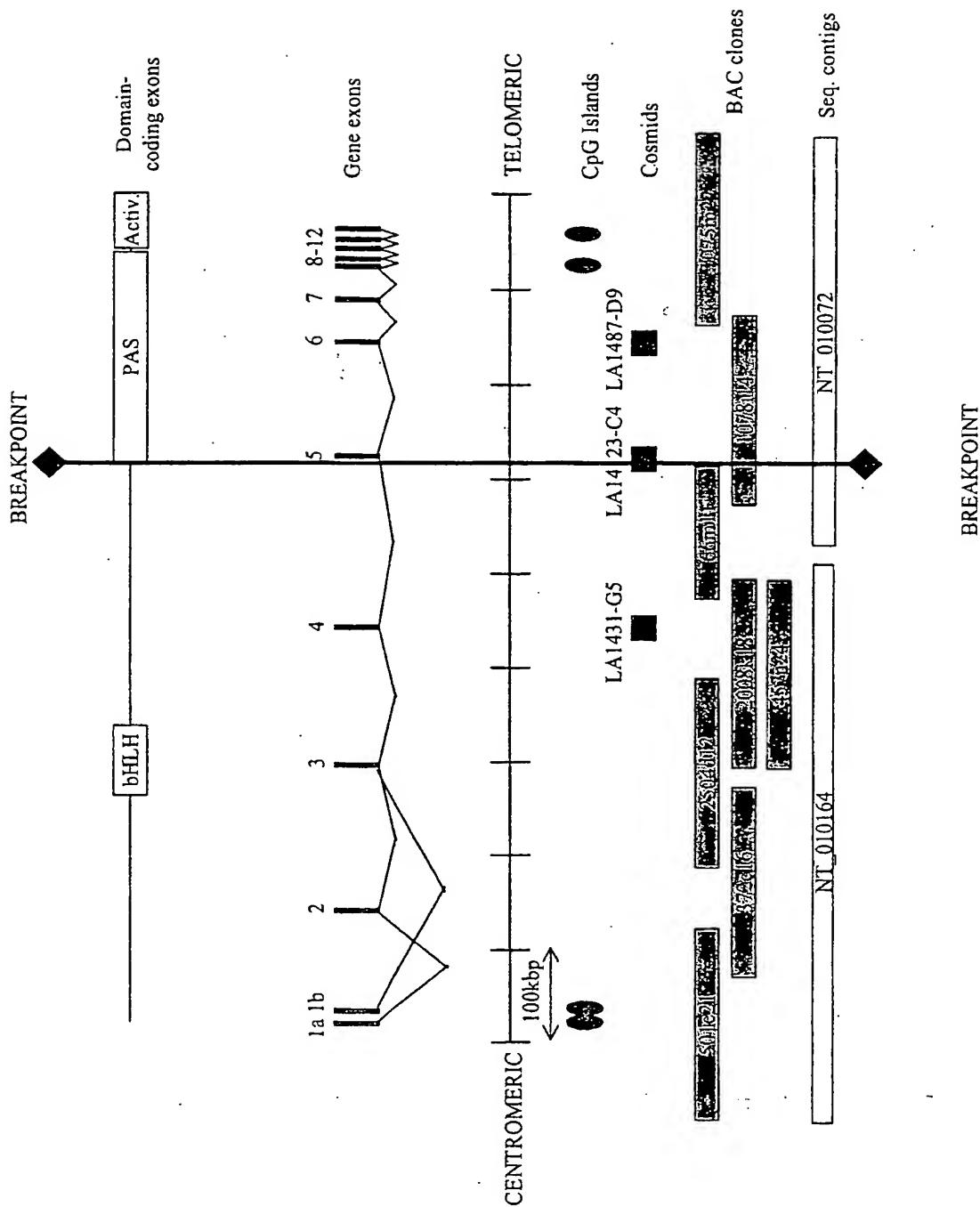


Figure 23



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Figure 24

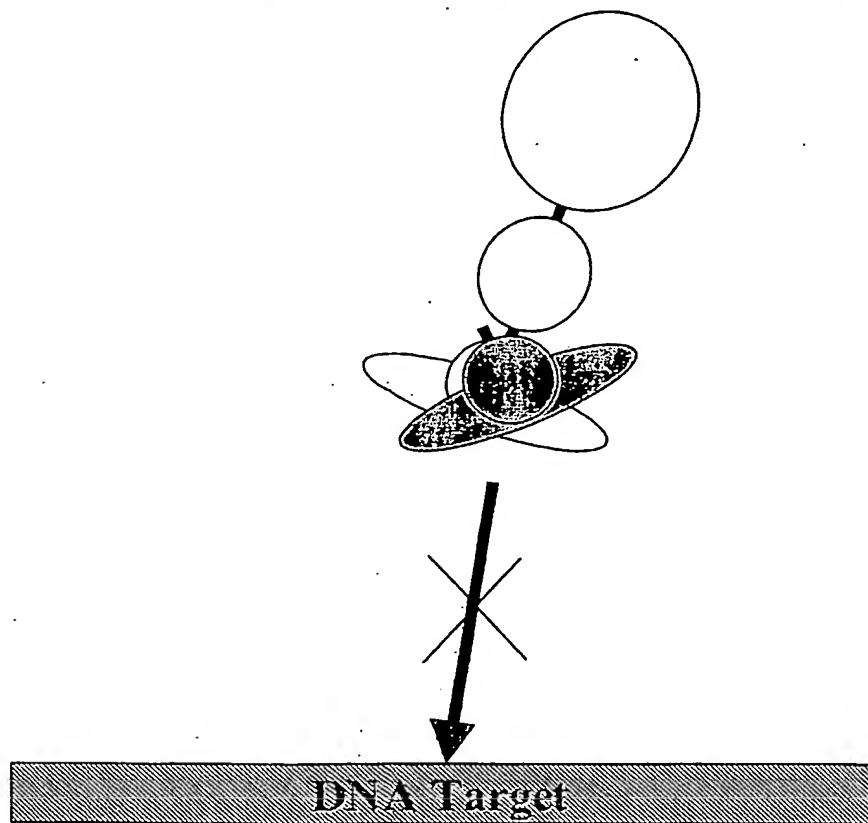
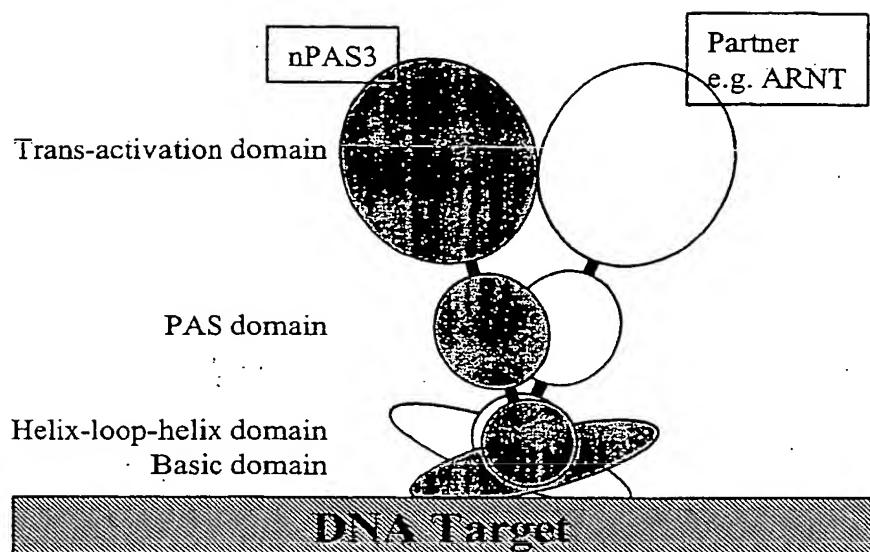


Figure 25

PDE4B1 (acc. L20966) Nucleic acid sequence

1 ggccgcggcgg cggtgcagca gaggcgccctc gggcaggagg agggcggtt ctgcgaggcg
61 agcctgagggt attaaaaagt gtcagcaaac tgcatgttga aacagacatc ctaagagggg
121 atattttcca cctctataat gaagaaaagc aggagtgtga tgacgggtat ggctgtatgtat
181 aatgttaaag attattttga atgttagctt agttaaatcct acagttttc cagtaacaca
241 cttgggatcg acctctggag agggagaagg tggctcgat gaaacttaca gitaccacca
301 ctgtctcaaa gacagagtga aagggcaagg actcctgagg gagatggtat ttccaggccc
361 accacactgc ctttgacaac gcttccaagc attgttattt caactgtaa ccaggagtgc
421 tttgtatgtgg aaaatggccc ttccccaggt cggagtccac tggatcccc ggcagctct
481 tccgctgggc tggtaattca cgccacccctt cctgggcaca gccagcgcag agagtcattt
541 ctctacagat cagacagcga ctatgactt tcacccaaagg cgatgtcgag aaactcttct
601 cttccaagcg agcaacacgg cgatgactt attgttaactt ctttgcccc ggtccttgcc
661 agcttgcgaa gtgtgagaqa caacttact atactgacaa accttcatgg tacatctaacc
721 .aagaggtccc cagctgctag tcagccctt gtctccagag tcaaccacaca agaagaatct
781 tatcaaaaat tagcaatgg aacgctggag gaatttagact ggtgtttaga ccagctagag
841 accatacaga cttaccggc tgcgtatgt atgcatttcta acaagttcaa aagaatgctg
901 aaccgggagc tgacacaccc tctcagatgt agccgatcag ggaaccagggt gtctgaatac
961 atttcaaata ctttctttaga caagcagaat gatgtggaga tcccacatcc taccaggaaa
1021 gacagggaga aaaagaaaaa gcagcagctc atgacccaga taagtggagt gaagaaattt
1081 atgcataatg caaggctaaa caatacaagc attcacgc ttggagtc当地 cactgaaaat
1141 gaagatcacc tggccaagga gctggaaagac ctgacacaaat ggggtcttaa catcttaat
1201 gtggctggat atttcacaa tagaccccta acatgcatac tgtatgttat attccaggaa
1261 agagacctcc taaagacatt cagaatctca tctgacacat ttataaccta catgtatgact
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1501 aatcgtttc tcatacacac aaattcagaa ctgtggatcc ttgatcatcc tggagtctcc
1561 ttggaaaatc atcaccttgc tgcgtatgttca aaactgttca aagaagaaca ctgtgacatc
1621 ttcatgaatc tcaccaagaa gcagcgtcag acactcaggaa agatggttat tgacatgggt
1681 ttagcaactg atatgtctaa acatatgacg ctgctggcag acctgaagac aatggtagaa
1741 acgaagaaaag ttacaagttc agggttctt ctcttagaca actataccga tcgcatttc
1801 gtccttcgca acatggtaca ctgtgcagac ctgagcaacc ccaccaagtc cttgaaattt
1861 tatcgccaat ggacagaccc catcatggag gaattttcc agcagggaga caaagagcgg
1921 gagaggggaa tggaaattag ccaatgtgt gataaaacaca cagcttctgt gaaaaatcc
1981 cagggtgggt tcatacgacta cattgtccat ccattgtggg agacatgggc agatttggta
2041 cagcctgtat ctcaggacat tctcgatacc tttagaagata acaggaactg gtatcagagc
2101 atgataacctc aaagccctc accaccactg gacgacggc acaggactg ccagggactt
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2221 gagggagagg gacacagcta ttcatgttgc acaaagacgc tttgtgtat tgatccagaa
2281 aacagagatt ccctgggaga gactgacata gacattgcaaa cagaagacaa gtcggcgtt
2341 gatacataat ccccccttcc ctgtggagat gaacattcta tccttcatgt gcatgccagc
2401 tatgtgttag ggccagccca ccatggggc caagacactgc acaggacaag ggcacactgg
2461 ctttcgtt acttgatgtt ggagtcaaaa agcaagacca ggaagcaat agcagctcg
2521 gaaatccac ggttacttgc cttgtatggc aagttgggt gagagggctg aagctgttgc
2581 tggggccga ttctgtatcaa gacacatggc ttgaaaatgg aagacacaaa actgagagat
2641 cattctgcac taagtttgcg gaacttatacc cgcacagtga ctgaactcac tgactaataa
2701 cttcatatat gaatcttctc acttgcatttgc ttgtctgcca acctgtgtgc ctttttgta
2761 aaacatttc atgttttaa aatgcctgtt gaataccctt agtttagtat caacttctac
2821 acagataagc ttcaaaagtt gacaaactt tttgtacttt tctggaaaag ggaaagaaaa
2881 tagtcttcct tcttcttgg gcaatatactt tcactttact acagttactt ttgcaaaacag
2941 acagaaagga tacacttcta accacatttt acttcccttcc cctgtgttcc agtccaactc
3001 cacagtcaact cttaaaactt ctctctgttt qcctqcctcc aacagttactt ttaacttttt

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3061 gctgtaaaca gaataaaatt gaacaaatta ggggtagaa aggagcagtg gtgtcggtca
3121 ccgtgagagt ctgcataaaaa ctcagcagtg tgccctgctg tgtcttggac cctgcaatgc
3181 ggccgc

Figure 26

PDE4B1 Protein sequence

MKKSRGVMTVMADDNVKDYFEGSLSKSYSSSSSNHECIDEWPRGRREESNLQIPPESSQRG
SIHARAPPECDGISRPPTMPLITLPSIATTTVSOECFDVINGPSPCRSEELDPOASSSAGE
VTHAHPGHSOKRRESHTYRSDSIDYDLTSPKAMSTRNSSGPSEOHGDDILTVIPLAQVIFASLP
SVRNNEETIILINIEGTISNIKRSPPAACQPPVSPAVNPOEESYQKLAMETLEELDWCLDQLETI
QTYRSVSEMASNKFKRMLNRELTHLSEMSRSGNQVSEYISNTFLDKQNDVEIPSPTQKD
REKKKKQQQLMTQISGVKKLMHSSSLNNNTSISRGVNTEDEDHLAKELEDLNKWGLNIFN
VAGYSHNRPLTCIMYAIFQERDLLKTFRISSDTFITYMMTLEDHYHSDVAYHNSLHAAD
VAQSTHVLSTPALDAVFTDLEILAAIAAAIHVDHPGVSNQFLINTNSELALMYNDE
SVLENHHHLAVGFKLLQEEHCDIFMNLTKKQRQTLRKMVIDMVLATDMSKHMSILLADLKT
MVETKKVTSSGVLLLDNYTDRIQVLRNMVHCADLSNPTKSLELYRQWTDRIMEEFFQQG
DKERERGMEISPMDKHTASVEKSQVGFIDYIVHPLWETWADLVQPDAQDILDLEDNR
NWYQSMIPQSPSPPLDEQRDCQGLMEKFQFELTLDEEDSEGPEKEGEGHSYFSSTKTL
CVIDPENRDSLGETDIDIATEDKSPVDT

Figure 27

PDE4B3 (acc. U85048) Nucleic acid sequence

1 atgacagcaa aagattcttc aaaggaactt actgcttctg aacctgaggt ttgcataaaag
61 actttcaagg agcaaatgca ttttagaactt gagcttccga gattaccagg aaacagacct
121 acatctccta aaatttctcc acgcgacttca ccaaggaact caccatgctt tttcagaaaag
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241 gatgtggaaa atggcccttc cccaggtcgg agtccactgg atccccaggc cagctttcc
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421 ccaagcgagc aacacggcga tgacttgatt gtaactcctt ttgcccaggc ccttgccagc
481 ttgcgaagtg tgagaaacaa cttcaactata ctgacaaacc ttcatggtac atctaacaag
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601 caaaaattag caatggaaac gctggaggaa ttagactggt gtttagacca gctagagacc
661 atacagaccc accggctgtc cagtggatg gcttctaaca agttcaaaag aatgctgaac
721 cgggagctga cacaccttc agagatggc cgatcaggga accaggggtc tgaatacatt
781 tcaaataact tcttagacaa gcagaatgt gtggagatcc catctccatcc ccaaaaaagac
841 agggagaaaaa agaaaaaagca gcagctcatg acccagataa gtggagtgaa gaaattaatg
901 catagttcaaa gcctaaacaa tacaaggatc tcacgctt gagtcaacac tggaaatgaa
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1021 gctggatatt ctcacaatag accccttaaca tgcacatgt atgcttatcc ccaaggaaaga
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1321 cagtttctca tcaacacaaa ttcagaactt gctttgtatg ataatgtga atctgtgttg
1381 gaaaaatcatc accttgctgt gggtttcaaa ctgctgcaag aagaacactg tgacatctt
1441 atgaatctca ccaagaagca gcgtcagaca ctcaggaaga tggttattga catgggttta
1501 gcaactgata tgtctaaaca tatgagccgt ctggcagacc tgaagacaat ggtagaaaacg
1561 aagaaaagtttta caagttcagg cgttcttccctc cttagacaact ataccgatcg cattcaggc
1621 cttcgcaaca tggtaactg tgcagacccgt agcaacccca ccaagtccctt ggaattgtat
1681 cggcaatgga cagacccgt catggaggaa ttttccagc agggagacaa agagcgggag
1741 aggggaatgg aaatttagccc aatgtgtgtaa aacacacac cttctgtgaa aaaaatcccag
1801 gttgggttca tcgactacat tgtccatcca ttgtgggaga catggcaga tttgggtacag
1861 cctgatgctc aggacattct cgataccttta gaagataaca ggaactggta tcagagcatg
1921 atacctcaaa gtcctcacc accactggac gagcagaaca gggactgcca gggctgtatg
1981 gagaagtttca agtttgaact gactctcgat gaggaagatt ctgaaggacc tgagaaggag
2041 ggagagggac acagcttattt cagcagcaca aagacgcttt gtgtgattga tccagaaaac
2101 agagattccc tgggagagac tgacatagac attgcaacag aagacaagtc ccccggttat
2161 aca

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Figure 28

PDE4B3 Protein sequence

```
MHAKDSSKEDMMAASIDEVQKTRKFKGQMTIIFELFIMPRIPGIVRPPNSPGESEPSSTERNSPCIEF  
KLLILVINKSIPDQRRETFVAHICHDWENCPSPGRSPIDPOASSGAGCLVETATEPCISORRES  
EYIYRSSESDMDLISPVAMSRNSSEPSHOFGDDLVAVTPAQVTAFTRSVRYNNHETIHLAHCII  
SNKRSDAASOPPVSVNPEEESYQKLAMETLEELDWCLDQLETIQTYRSVSEMASNKFK  
RMLNRELTHLSEMSRSGNQVSEYISNTFLDKQNDVEIPSPTQKDREKKKKQQQLMTQISG  
VKKLMHSSSLNNTSISRGVNTENEDHLAKELEDLNKGGLNI FNVAGYSHNRPLTCIMY  
AIFQERDLLKTFRISSDTFITYMMTLEDHYHSDVAYHNSLHAADVQSTHVLLSTPALD  
AVFTDLEILAAIFAAAIDVDHPGVSNQFLINTNSELALMYNDESVLENHHLAGGFKLL  
QEEHCDIFMNLTKKQRQTLRKMVIDMVLATDMSKHMSLLADLKTMVETKKVTSSGVLLL  
DNYTDRIQVLRNMVHCADLSNPTKSLEYRQWTDRIMEEFFQQGDKERERGMEISPMD  
KHTASVEKSQVGFIDYIVHPLWETWADLVQPDAQDILDLEDNRNWYQSMIPQSPSPPL  
DEQNRDCQGLMEKFQFELTLDEEDSEGPEKEGEGHSYFSSTKTLCVIDPENRDSLGETD  
IDIATEDKSPVDT
```

Figure 29

PDE4B2 (acc. NM_002600) Nucleic acid sequence

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1 gaattcctcc tctcttcacc ccgttagctg ttttcaatgt aatgctgccg tccttccttt
61 gcaactgcctt ctgcgttaac acctccatc ctgtttataa ccgtgtatTTT attacttaat
121 gatatataatg taatgttttgg taagttatTAATTATATACT ctaacatTCG ctgccaatgg
181 tgggtttaaa ttgtgttaga aaactctGCC taagagttac gactttttGT tgtaatgttt
241 ttttattgtgtt attatataac ccaaacgtca ctttagtagag acatatggcc cccttggcag
301 agaggacagg ggtgggcttt ttttcaaaagg gtctgcctt tccctgcctg agttgtact
361 tctgcacaac ccctttatga accagtttc acccaattt tgactgtttc atttagaaga
421 aaagcaaaaat gaaaaaaAGC tttcctcatt tctccttgAGG atggcaaaAGC actcagaat
481 gacatcacat accctaaaAGA accctgggat gactaaggca gagagaggtct gaaaaactc
541 tttggtgctt ctgcctttAGG ttttaggaca catttatgcA gatgagctta taagagaccg
601 tttccctccgc cttcttcctc agaggaagt tcttggtaga tcaccgcAC ctcatccagg
661 cgggggggttg gggggaaaACT tggcaccAGC catcccAGGC agagcaccAC tggatttgt
721 ttcctctggtg gagagagctg gaagggaaAGG gccagcgtgc aaataatgaa ggagcacggg
781 ggcaccttca gtagcaccGG aatcagcgtt ggtagcgggtg actctgttat ggacagcctg
841 cagccgctcc agcctaacta catgcctgtg ttgtgttttgc cagaagaatc ttatcaaaaa
901 ttagcaatgg aaacgctggA ggaatttagAC ttgtgttttgc accagctaga gaccatacag
961 acttaccggt ctgtcagtGA gatggcttCA aacaagtTC aaaaatgtct gaaccgggag
1021 ctgacacacCC ttcagagat gagccgatCA gggAACCCAGG tttctgtataa cattcaaat
1081 actttcttag acaagcagAA tgatgtggAG atcccatTC ctacccAGAA agacagggag
1141 aaaaagaaaaa agcagcagCT catgaccCAG ataagtggAG tgaagaaatt aatgcatagt
1201 tcaaggctaa acaatacAAAG catctcAGC tttggagtCA acactgaaaaa tgaagatcac
1261 ctggccaagg agctggAAAGA cctgaacAAA tggggcttA acatcttAA tttggctggA
1321 tattctcaca atagacccCT aacatgcATC atgtatgCTA tattccAGGA aagagacctc
1381 ctaaagacat tcagaatCTC atctgacACA tttataacCT acatgatGAC tttagaagac
1441 cattaccatt ctgacgtggc atatcacaAC agcctgcACG ctgctgtgt agcccaagtgc
1501 acccatgttc tccttctac accagcatTA gacgctgtCT tcacagattt ggagatcctg
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1621 ctcatacaaca caaattcaga acttgcttTG atgtataatg atgaatctgt gttggaaaaat
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1741 ctcaccaAGA agcagcgtca gacactcagg aagatggTTA ttgacatggT gttagcaact
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1861 gttacaagtt caggcgTTt ttccttagAC aactataACG atcgcattCA ggtccttcgc
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2341 ggacacagCTt atttcagcAG cacaaAGACG ctttGtGTA ttgatccAGA aaacagagat
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2521 gggccAGCCC accatggggG ccaagacCTG cacaggacAA gggccacCTG gccttcAGT
2581 tacttgAGTT tggagtcAGA aagcaAGACC aggaAGCAAA tagcagctCA ggaatcccc
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2761 ctaagtttCG ggaacttACt cccgacAGtG actgaactCA ctgactaata acttcatttA
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2881 catgtcttta aaatgcctgt tgaatacctG gagtttagtA tcaacttcta cacagataAG
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3061 atacacttct aaccacatTT tacttccttc ccctgttgc cagtccaact ccacagtcac
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3181 agaataaaat tgaacaaatt agggggtaga aaggagcgt ggtgtcgTT accgtgagag
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3301 gctacagtcc ctggccctgc ttcccattc cctctttca ccccgTTAGC tgTTTcaat
3361 gtaatgctgc cgtcTTTcTC ttgcactgcc ttctgcgcta acacctccat tcctgtttat
3421 aaccgtgtat ttattactta atgtatataa tgaatgttt tgtaagtat taatttatat
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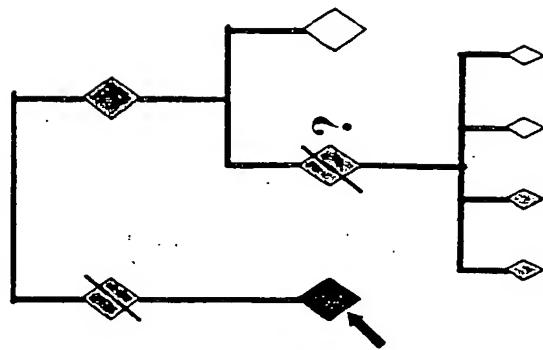
Figure 30

PDE4B2 Protein sequence

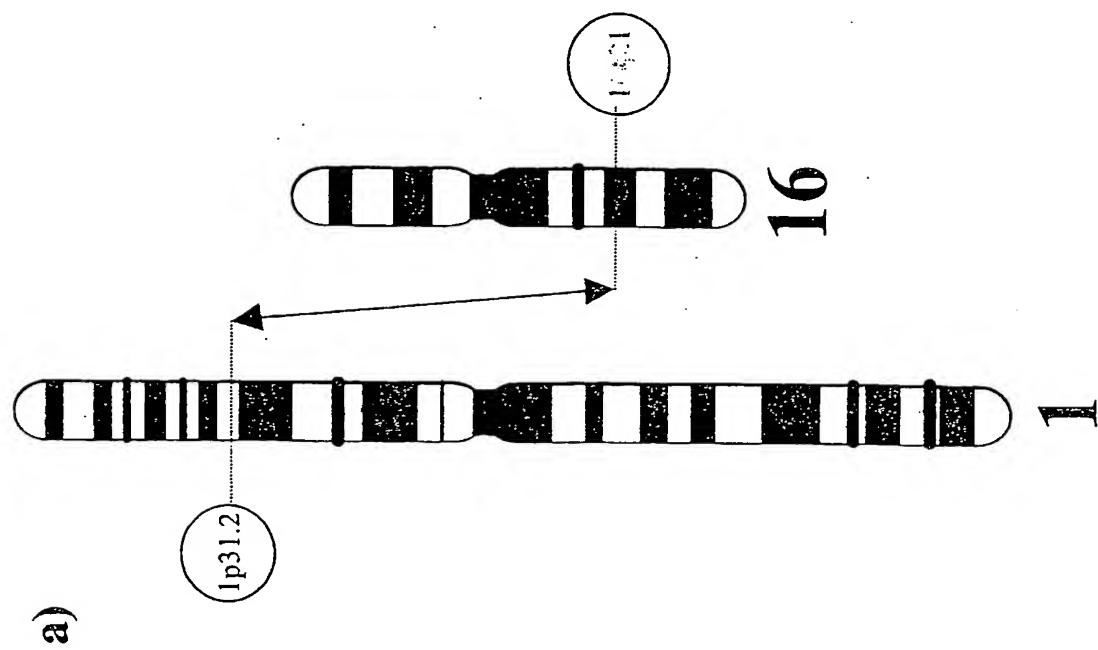
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PTQKDREKKKKQQLMTQISGVKKLMHSSSLNNTSISRGVNTEEDHLAKELEDLNKG
LNIFNVAGYSHNRPLTCIMYAI FQERDLLKTFRISSDTFITYMMTLEDHYHSDVAYHNS
LHAADVAQSTHVLLSTPALDAVFTDLEILAAIFAAAIHDVDHPGVSNQFLINTSELAL
MYNDESVLENHHlavGFkllQEEHCDIFMNLTKQRQTLRKMVIDMVLATDMSKHMSLL
ADLKTIVETKKVTSSGVLLLNDNYTDRIQVLRNMVHCADLSNPTKSLEYRQWTDRIMEE
FFQQGDKERERGMEISPMDKHTASVEKSQVGFIDYIVHPLWETWADLVQPDAQDILD
LEDNRNWYQSMIPQSPSPPLDEQNRDCQGLMEKFQFELTLDEEDSEGPEKEGEHSYFS
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Figure 31

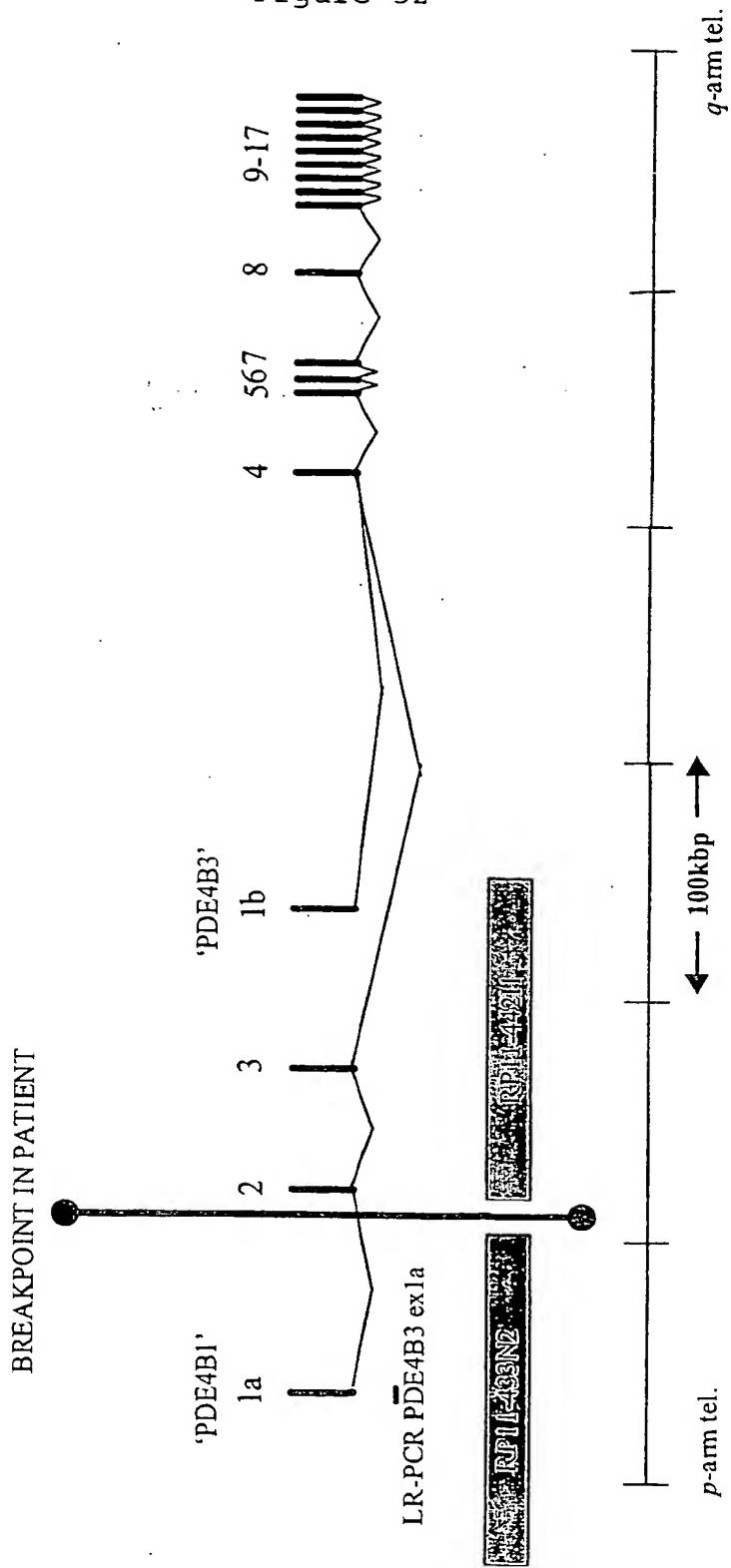


b)



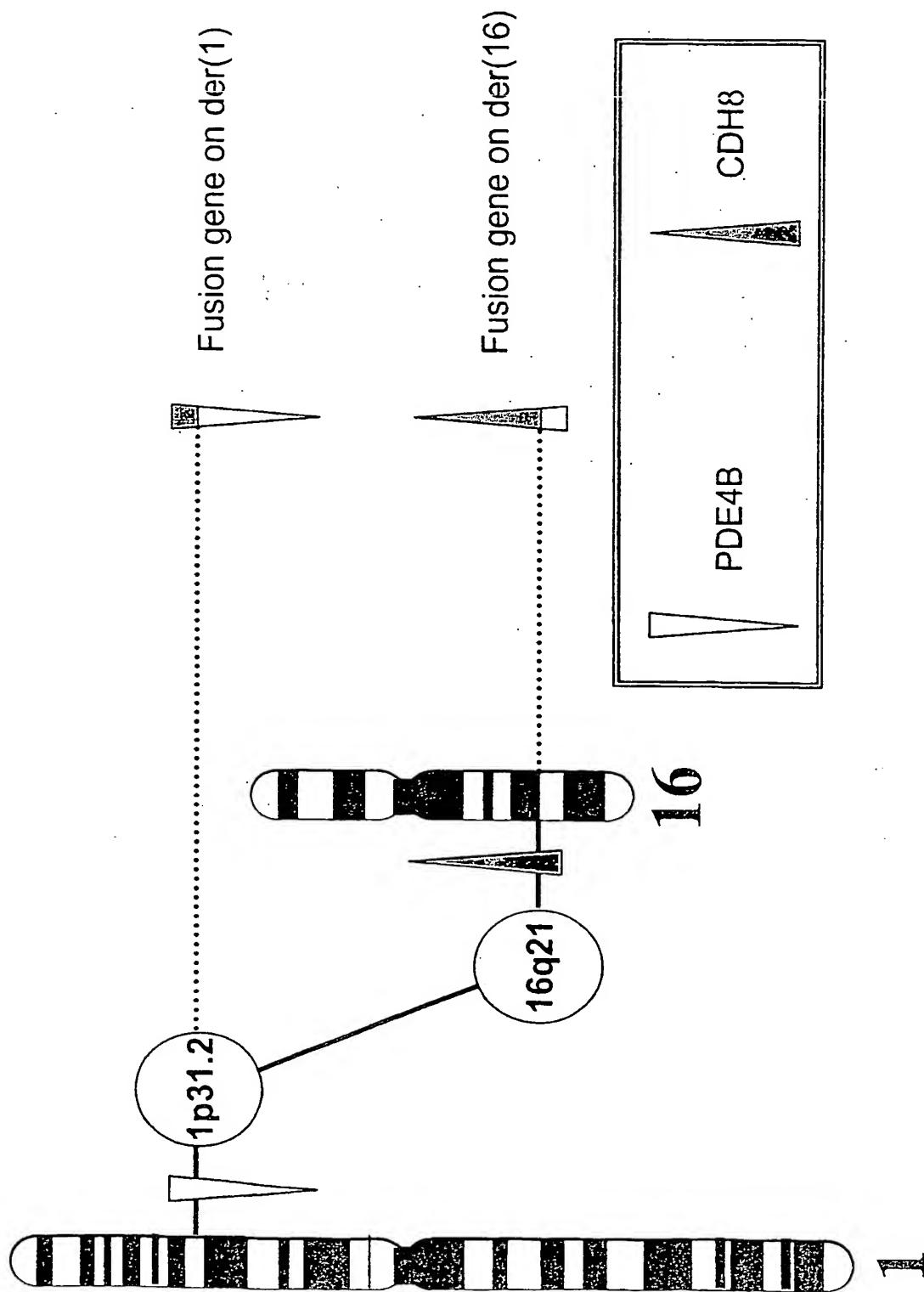
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Figure 32



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Figure 33



10/511455

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Figure 34

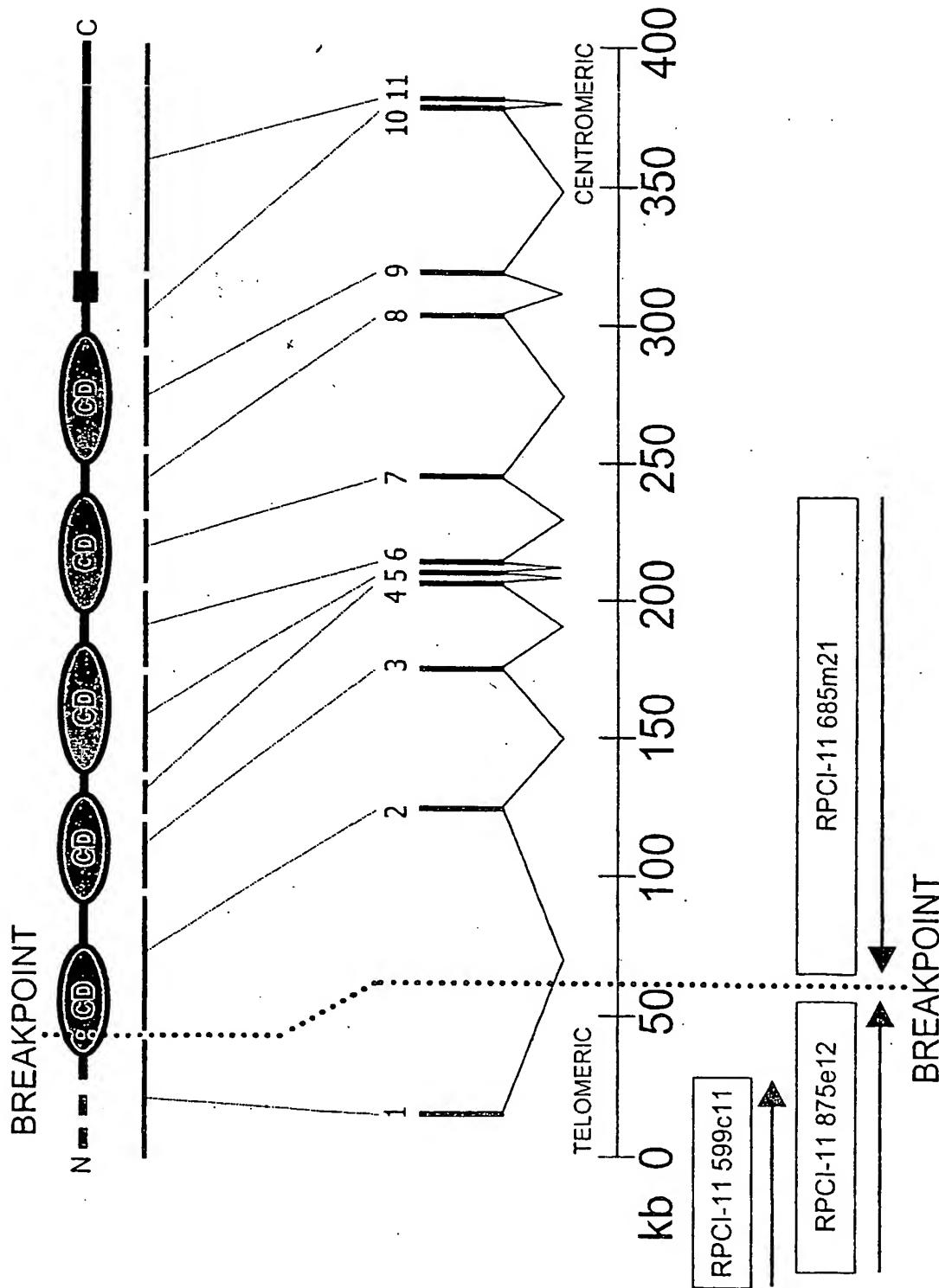


Figure 35

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901 tccattgagc ctgaaacagc tattataaaa actggcccttgc ccaaatgttgc gagagaagcc
961 aaggaggagt acctgggttgc tatccaagcc aaagatatgg gtggacactc ttgtggccctg
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1081 gcacagagcc tgtatcaattt ctcagttcccg gaagatgtgg ttcttggcac tgcaatagg
1141 agggtgaagg ccaatgtatca ggatatttgtt gaaaatgtcacatgcata tttatcatc
1201 gatggagatg gaacagactt ttttgaatc acttctgtgc cccaggccca ggatggcatt
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1861 ccagaaaatgg tcaacaatcc gaatttcacc atcaagaaaaa atgaagataa ttccctcagt
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2161 atcgtgttgtc tgggttgtac tctacggccgg cataaaaaatgc tatcaaaagat
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2521 ggctccctca gtccttggc gtccaccaca tcagactcgc accagaattt tgactaccc
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2701 agggtcactc cccttagata caaccaatgt ggctattttgt ttttagggca agtttagc
2761 cagtcatctatca taaaactcaac cacattttaa tggatgttgc aaaaaagata ataaaataaa
2821 aaagttatgc ttaggaggtt ataaatcttgc tggatgttgc attaagtatgc tggatgttgc
2881 agaagtccctt ggatatttgc tatttacccgc accaccacatg acaaagatttgc

Figure 36

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121 IKRLDREEKA EYLTAAQAVD WETSKPLEPP SEFTI KVQDI NDNAPEFLNG PYHATVPEMS
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241 LVVIQAKDMG GHSGGLSGTT TLT VTLTDVN DNPKFAQSL YHFSVPEDVV LGTAIGRVKA
301 NDQDIDENAQ SSYDI IDGDG TALFEITSDA QA QDGII RLR KPLDFETKKS YTLKVEAANV
361 HIDPRFSGRG PFKDTATVKI VVEDADEPPV FSSPTYLLEV HENAALNSVI GQVTARDPDI
421 TSSPIRFSID RHTDLERQFN INADDGKITL ATPLDRELSV WHNITIIATE IRNHSQISRV
481 PVAIKVLDVN DNAPEFASEY EAFLCENGKP GOMIQTVSAM DKDDPKNGHY FLYSLLPEMV
541 NNPNFTIKKN EDNSLSILAK HNGFN RQKQE VYLLPIIISD SGNPPLSSTS TLTIRVCGCS
601 NDGVVQSCNV EAYVLPIGLS MGALIAILAC IILLVIVVL FVTLRRHKNE PLI IKDDEDV
661 RENI IRYDDE GGGEEDTEAF DIATLQNPDG INGFLPRKDI KPDLQFMPHQ GLAPVPGVD
721 VDEFINVR LH EADNDPTAPP YDSIQIYGYE GRGSVAGSLS SLESTTS DSD QNF DYLS DWG
781 PRFKRLGELY SVGESDKET

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Figure 37

a)

MPERLAEMLLDLWTPLIILWITLPPCIYMAPMNQSQVLMMSGPLELNSLGEEQRILNRS
 KRGWVWNQMVFVLEEFSGPEPILVGRVLKSVSKLH*

b)

G R G G A A E A P R A G G G R L L R G Q	
3 ggcgcggcggtgcagcagaggcgctcgccaggaggcgccgttcgtcgagggcag	62
P E L H T D L D P G S K K I K Y I L S G	
63 cctgag <u>q</u> tacacacagac <u>c</u> ctggat <u>c</u> ctggagcaaaaaat <u>a</u> agtata <u>t</u> at <u>c</u> ctat <u>c</u> aggt	122
D G A G T I F Q I N D V T G D I H A I K	
123 gatggag <u>c</u> tg <u>g</u> gacc <u>a</u> tt <u>t</u> caa <u>a</u> at <u>a</u> at <u>g</u> at <u>g</u> ta <u>a</u> ct <u>g</u> g <u>g</u> ag <u>a</u> at <u>t</u> cc <u>at</u> g <u>c</u> t <u>a</u> aaaa	182
R L D R E E K A E Y T L T A Q A V D W E	
183 agactt <u>g</u> acc <u>g</u> gg <u>g</u> agg <u>g</u> aaa <u>g</u> g <u>c</u> t <u>g</u> ag <u>t</u> at <u>a</u> cc <u>c</u> ta <u>a</u> c <u>g</u> ct <u>c</u> aa <u>g</u> ct <u>g</u> act <u>g</u> gg <u>g</u> ag	242
T S K P L E P S E F I I K V Q D I N D	
243 acaag <u>c</u> aa <u>c</u> c <u>t</u> ct <u>g</u> g <u>g</u> ac <u>c</u> c <u>t</u> ct <u>g</u> at <u>u</u> att <u>t</u> att <u>a</u> ag <u>t</u> ca <u>g</u> ac <u>u</u> at <u>g</u> ac	302
N A P E F L N G P Y H A T V P E M S I L	
303 aat <u>g</u> c <u>ac</u> c <u>ca</u> g <u>g</u> at <u>t</u> t <u>c</u> ta <u>at</u> gg <u>g</u> ac <u>c</u> c <u>t</u> at <u>cat</u> g <u>c</u> t <u>ac</u> t <u>g</u> tg <u>g</u> cc <u>g</u> aaa <u>at</u> gt <u>cc</u> at <u>tt</u> tg	362
G T S V T N V T A T D A D D P V Y G N S	
363 ggt <u>ac</u> at <u>c</u> t <u>g</u> t <u>c</u> act <u>a</u> c <u>g</u> t <u>c</u> act <u>g</u> cg <u>ac</u> cg <u>ct</u> gt <u>g</u> at <u>g</u> ac <u>cc</u> ag <u>tt</u> at <u>g</u> g <u>aa</u> ac <u>ag</u> t	422
A K L V Y S I L E G Q P Y F S I E P E T	
423 g <u>ca</u> aa <u>at</u> tg <u>g</u> tt <u>t</u> at <u>ag</u> t <u>at</u> tt <u>g</u> g <u>aa</u> agg <u>g</u> cg <u>ac</u> ct <u>g</u> tt <u>at</u> tt <u>tt</u> cc <u>at</u> t <u>g</u> ag <u>g</u> c <u>c</u> t <u>g</u> aa <u>ac</u> a	482
A I I K T A L P N M D R E A K E E Y L V	
483 g <u>ct</u> att <u>t</u> aaaa <u>ac</u> t <u>g</u> cc <u>ct</u> cc <u>ca</u> ac <u>at</u> tg <u>g</u> ac <u>ag</u> aga <u>ag</u> cc <u>aa</u> agg <u>g</u> agg <u>g</u> at <u>ac</u> t <u>g</u> tt	542
V I Q A K D M G G H S G G L S G T T T L	
543 g <u>tt</u> at <u>cc</u> a <u>ag</u> cc <u>aa</u> ag <u>at</u> at <u>gg</u> tt <u>gg</u> ac <u>ac</u> t <u>ct</u> tg <u>g</u> tt <u>gg</u> cc <u>ct</u> gt <u>ct</u> gg <u>g</u> acc <u>ac</u> g <u>ac</u> act <u>u</u>	602
T V T L T D V N D N P P K F A Q S L Y H	
603 a <u>ac</u> at <u>g</u> act <u>tt</u> act <u>g</u> at <u>g</u> tt <u>at</u> g <u>aca</u> at <u>c</u> c <u>cc</u> aaaa <u>at</u> tt <u>g</u> c <u>ac</u> ag <u>g</u> c <u>ct</u> gt <u>at</u> c <u>ac</u>	662
F S V P E D V V L G T A I G R V K A N D	
663 t <u>t</u> ct <u>c</u> ag <u>t</u> ac <u>cc</u> gg <u>g</u> aa <u>ag</u> at <u>g</u> tg <u>g</u> tt <u>t</u> tt <u>g</u> g <u>ca</u> ct <u>g</u> ca <u>at</u> ag <u>g</u> ga <u>gg</u> gt <u>g</u> aa <u>gg</u> cc <u>aa</u> at <u>g</u> at	722
Q D I G E N A Q S S Y D I I D G D G T A	
723 c <u>agg</u> at <u>t</u> tg <u>g</u> aa <u>at</u> g <u>c</u> ac <u>ag</u> t <u>c</u> at <u>cat</u> at <u>g</u> at <u>at</u> cat <u>g</u> at <u>g</u> g <u>g</u> ag <u>at</u> g <u>g</u> aa <u>ac</u> g <u>ca</u>	782
L F E I T S D A Q A Q D G I I R L R K P	
783 c <u>tt</u> tt <u>g</u> aa <u>at</u> c <u>ac</u> t <u>ct</u> tg <u>g</u> cc <u>ag</u> gg <u>cc</u> cc <u>ag</u> gt <u>g</u> g <u>c</u> att <u>t</u> at <u>a</u> agg <u>c</u> ta <u>ag</u> aaa <u>ac</u> ct	842
L D F E T K K S Y T L K V E A A N V H I	
843 ct <u>gg</u> act <u>tt</u> g <u>ag</u> ac <u>cc</u> aaaa <u>at</u> cc <u>ta</u> ac <u>g</u> ct <u>aa</u> agg <u>g</u> tag <u>g</u> agg <u>g</u> c <u>ag</u> cc <u>aa</u> at <u>g</u> cc <u>at</u> att	902
D P R F S G R G P F K D T A T V K I V V	
903 g <u>ac</u> cc <u>ac</u> g <u>ct</u> tc <u>ag</u> t <u>g</u> g <u>ca</u> gg <u>gg</u> gg <u>cc</u> ct <u>tt</u> aa <u>ag</u> ac <u>ac</u> gg <u>g</u> g <u>ca</u> ag <u>g</u> t <u>ca</u> aa <u>at</u> c <u>g</u> tg <u>g</u> tt	962
E D A D E P P V F S S P T Y L L E V H E	
963 g <u>aa</u> g <u>at</u> g <u>c</u> t <u>g</u> at <u>g</u> g <u>ag</u> cc <u>ct</u> cc <u>gg</u> t <u>tt</u> ct <u>tt</u> cc <u>ac</u> gg <u>ac</u> t <u>tt</u> ac <u>ct</u> act <u>g</u> aa <u>ag</u> tt <u>ca</u> tg <u>aa</u>	1022
N A A L N S V I G Q V T A R	
1023 a <u>at</u> g <u>c</u> t <u>g</u> ct <u>aa</u> ac <u>cc</u> gt <u>g</u> at <u>g</u> gg <u>g</u> ca <u>ag</u> t <u>g</u> act <u>g</u> ct <u>cg</u> t etc.....	